IMPORTANT

Before you remove the Wire-Seal, check the contents of this envelope with the listing on the front of the envelope. If any part is missing, your Howard W. Sams distributor will replace the entire PHOTOFACT set IF the Wire-Seal has not been damaged.

This PHOTOFACT Folder Set is

WIRE-SEALED FOR YOUR PROTECTION

to guarantee completeness of contents

DO NOT ACCEPT IF SEAL HAS BEEN BROKEN

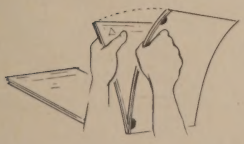
TO OPEN ***JUST DO THIS:***

1

Take hold of the Set with both hands. Place your thumbs directly under the top wire-seal; then, divide the contents equally by putting your thumbs midway through the thickness of the Set. Now, pull the two sections apart at the top, firmly.

2

Repeat this process, pulling close to the wire-seal at the bottom, so that the set is now divided into two equal parts.



3

Continue this "pulling-apart" process with the section in which the wire-seals remain, dividing it in half.

4

Finally, remove the wire-seals left in the last section; this can easily be done with your fingernail or any sharp instrument.

Your "Safety-Sealed" PHOTOFACT Set is now ready for profit-making use . . .

IMPORTANT

Before you remove the Wire-Seal, check the contents of this envelope with the listing on the front of the envelope. If any part is missing, your Howard W. Sams distributor will replace the entire PHOTOFACT set IF the Wire-Seal has not been damaged.

The PHOTOFACT® Servicer

SET 502 ★ *Published for all users of Howard W. Sams' Photofact Folders* ★ OCT. 1960

CONTENTS PHOTOFACT SET 502

TRADE NAME AND MODEL	SET AND FOLDER NO.
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SONORA S60K212, S60LB214, S60T211 (Ch. 1150-100)	502-2
PRODUCTION CHANGE BULLETIN	
ANDREA Tel. Rec. 1C-VRT-123-1, 2C-VRT-123-1, 3C-VRT-123-1 (Ch. VRT-123-1)	502-3
HOFFMAN Tel. Rec. M3703, SP3703, W3703 (Ch. 426, 1139)	502-3
RCA VICTOR Amplifier KS23, PD23, PD24, PM23D (Ch. RS-178, X)	502-3
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OLYMPIC 442W-1	502-14
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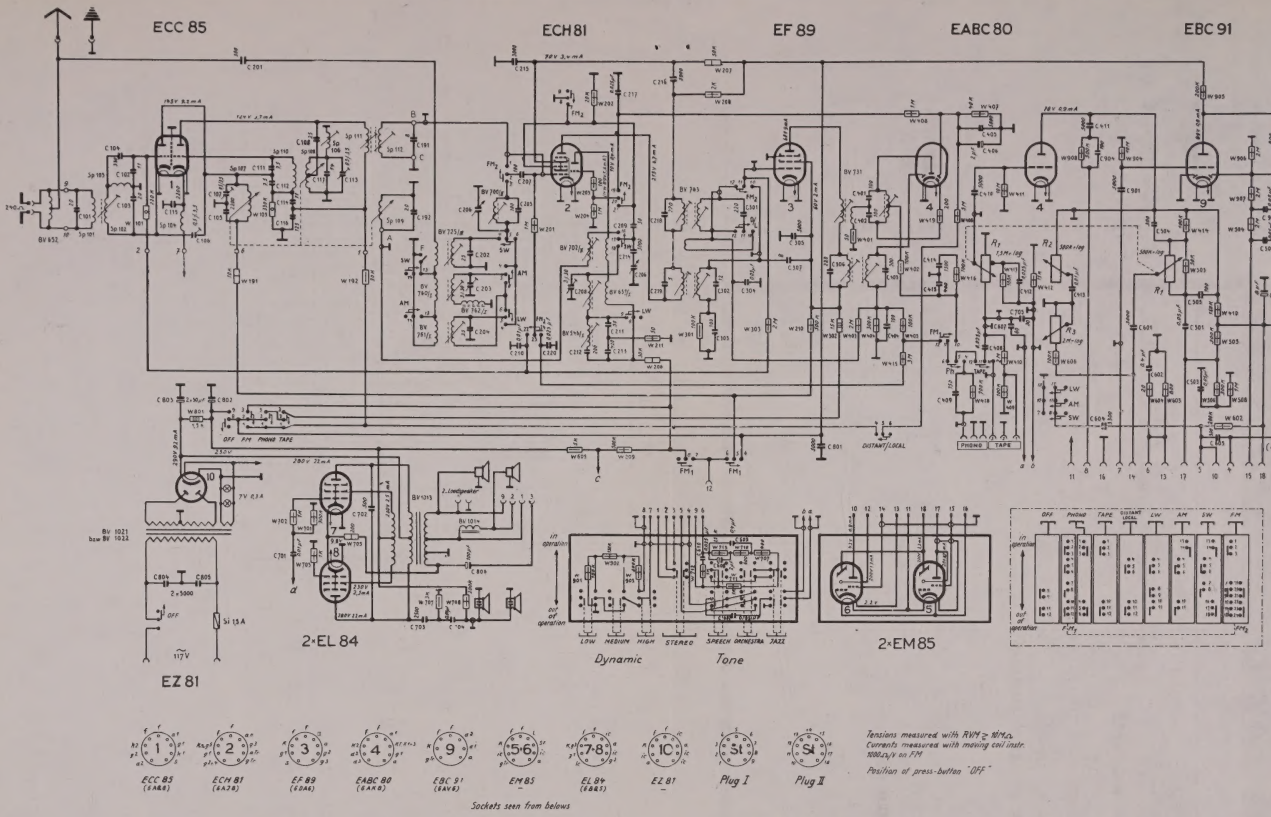
WESTINGHOUSE H-722T6, H-723T6 (Ch. V-2401-2)	502-18

This Servicer provides you with essential data on other models or special equipment not covered in standard PHOTOFACT folders. The schematics and supplementary data included here will be of valuable help to you in servicing this equipment.

IN THIS ISSUE OF THE SERVICER:

Capitol Model 833

Kuba Model 833W

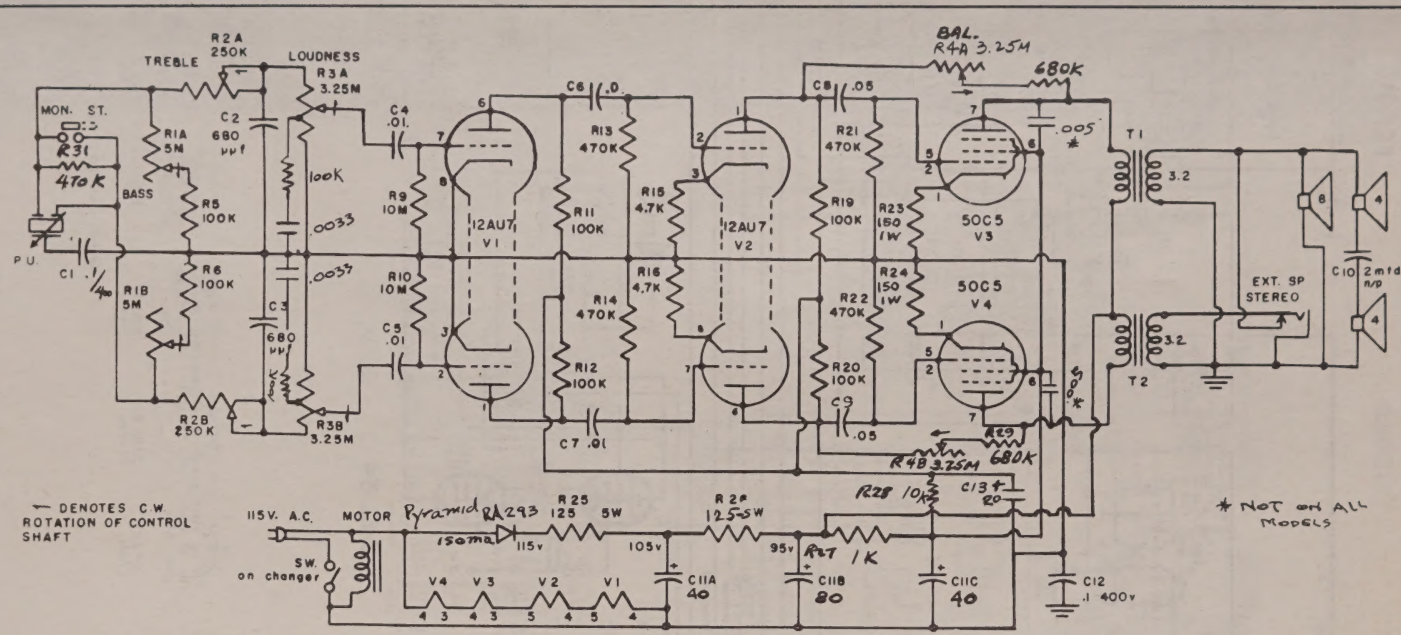


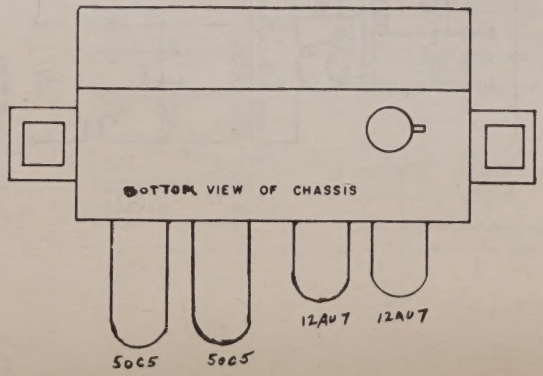
Tensions measured with RVM ≥ 10 MΩ.
Currents measured with moving coil instr. 1000 Ω/V on FM

Position of press-button "OFF"

KUBA MODEL 833W

Schematic Diagram Courtesy of Kuba: Importer Delmonico International





NOTE: VOLTAGES INDICATED MEASURED BY ELECTRONIC VOLTMETER WITH 117V LINE. MAY VARY ± 20%

CAPITOL MODEL 833

Schematic Diagram Courtesy of Capitol Records, Inc.

PHOTOFACT® Folder with CIRCUITRACE®

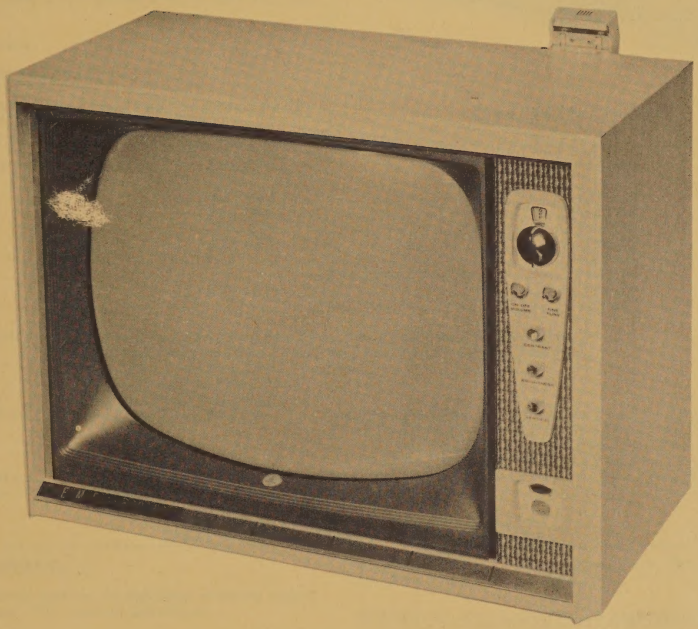
EMERSON CHASSIS 120517E, 120518F, 120519C, 120520D, 120525E, 120526C, 471235

IMPORTANT FILING NOTICE

The TV Folder for this envelope will be found among the first folders in this complete Set of folders.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

EMERSON CHASSIS 120517E, 120518F, 120519C, 120520D, 120525E, 120526C, 471235



EMERSON CHASSIS 120517E, 120518F, 120519C, 120520D, 120525E, 120526C, 471235

MODEL 1610 (CH. 120526C)

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1960 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

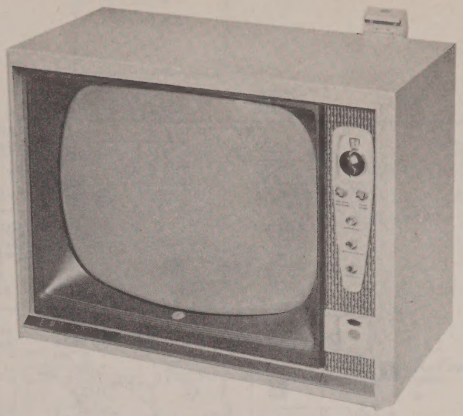
DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL MODEL 1610

1. Remove 17 wood screws holding rear cover. Remove rear cover.
2. Remove 6 push-on type knobs at front of cabinet.
3. Remove 4 nuts holding tuner and control panel, and 2 nuts at back of set holding tuner.
4. Remove speaker leads, high voltage lead, picture tube socket, and yoke.
5. Remove 2 chassis bolts and 3 metal screws at bottom of cabinet. Remove 2 wood screws at top of cabinet holding chassis.
6. Remove chassis.

PICTURE TUBE REMOVAL

It is necessary to remove the chassis for picture tube removal. (See "Chassis Removal".)



MODEL 1610 (CH. 120526C)

TRADE NAME	EMERSON MODELS	CHASSIS
	1600, 1604	120517E
	1601, 1605	120518F
	1608, 1612	120519C
	1609, 1613	120520D
	1602	120525E
	(With Remote Control)	471235
	1610, 1614	120526C
	(With Remote Control)	471235

MANUFACTURER	Emerson Radio & Phonograph Corp., 524 W. 23rd Street, New York 11, N. Y.
TYPE SET	Television Receiver (Models 1602, 1610, and 1614 with Remote Control)
TUBES	TV: VHF - Seventeen, UHF - Eighteen Remote Control Receiver: Five
TRANSISTOR	Remote Control Transmitter: Two
POWER SUPPLY	110-120 Volts AC, 60 Cycle RATING 245 Watts, 2.2 Amp. @ 117 Volts AC (While Tuning) 220 Watts, 1.9 Amp. @ 117 Volts AC (Not Tuning) 190 Watts, 1.7 Amp. @ 117 Volts AC (TV Only) 30 Watts, .2 Amp. @ 117 Volts AC (Remote Control Rec.)
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

SERVICING IN THE FIELD

SAFETY GLASS REMOVAL

Remove 4 screws holding the trim strip at the top edge of the safety glass. Tilt glass out and remove.

FUSE

A fuse is used for low voltage supply protection. (For location, see "Tube Placement Chart".)

A fuse wire is used for filament protection. (For location, see M3 in photo "Chassis-Front View").

TUNER OSCILLATOR ADJUSTMENT

To touch up VHF Oscillator, remove Channel Selector knob.

AGC

The AGC may be varied by means of a Local-Distance control. (For location, see "Tube Placement Chart".)

FOCUS

The focus may be varied by connecting the lead from pin 4 of the picture tube to various voltage points. (For location, see photo "Cabinet - Rear View".)

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Coarse adjustment of the Horizontal Hold is accomplished by the proper setting of the Horiz. Mult. Trimmer. (For location, see "Cabinet-Rear View").

WIDTH

Some versions may use a jumper across R85 to increase width.

HORIZONTAL DRIVE

The horizontal drive may be varied by a Horizontal Drive Control. (For location, see "Tube Placement Chart".)

CENTERING

Centering is accomplished by 2 magnetic rings, located behind the yoke, on the neck of the picture tube.

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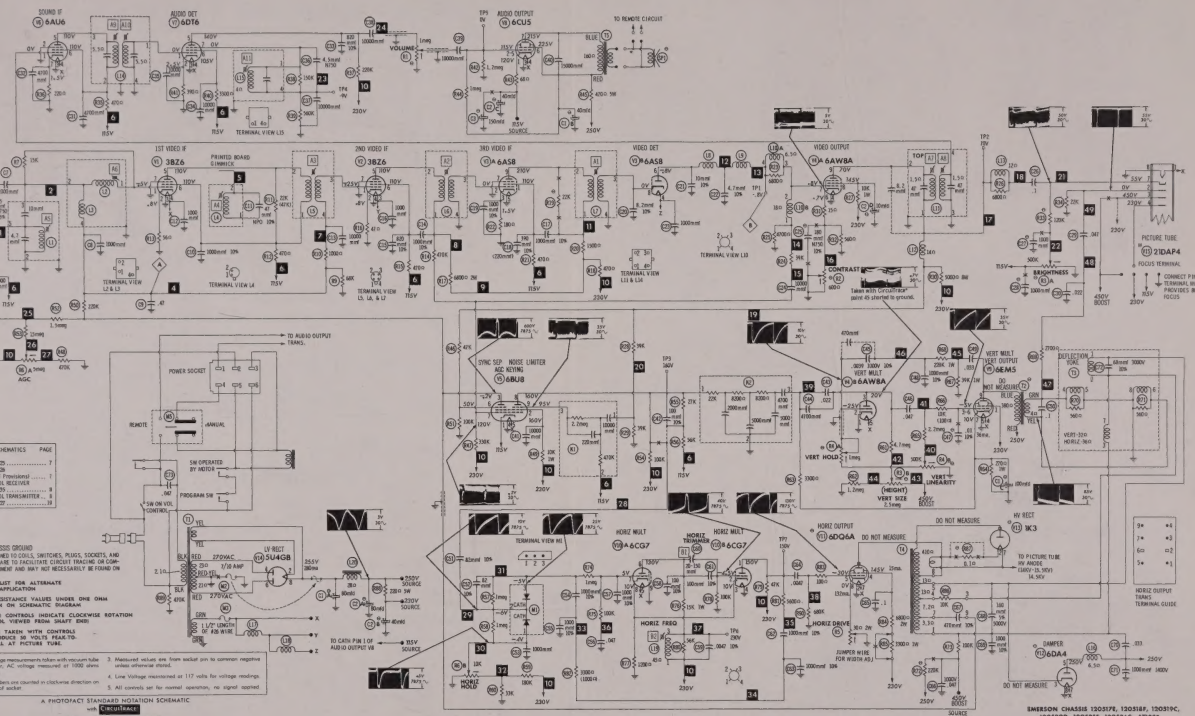
KA294

EMERSON CHASSIS 120517E, 120518F, 120519C, 120520D, 120525E, 120526C, 471235

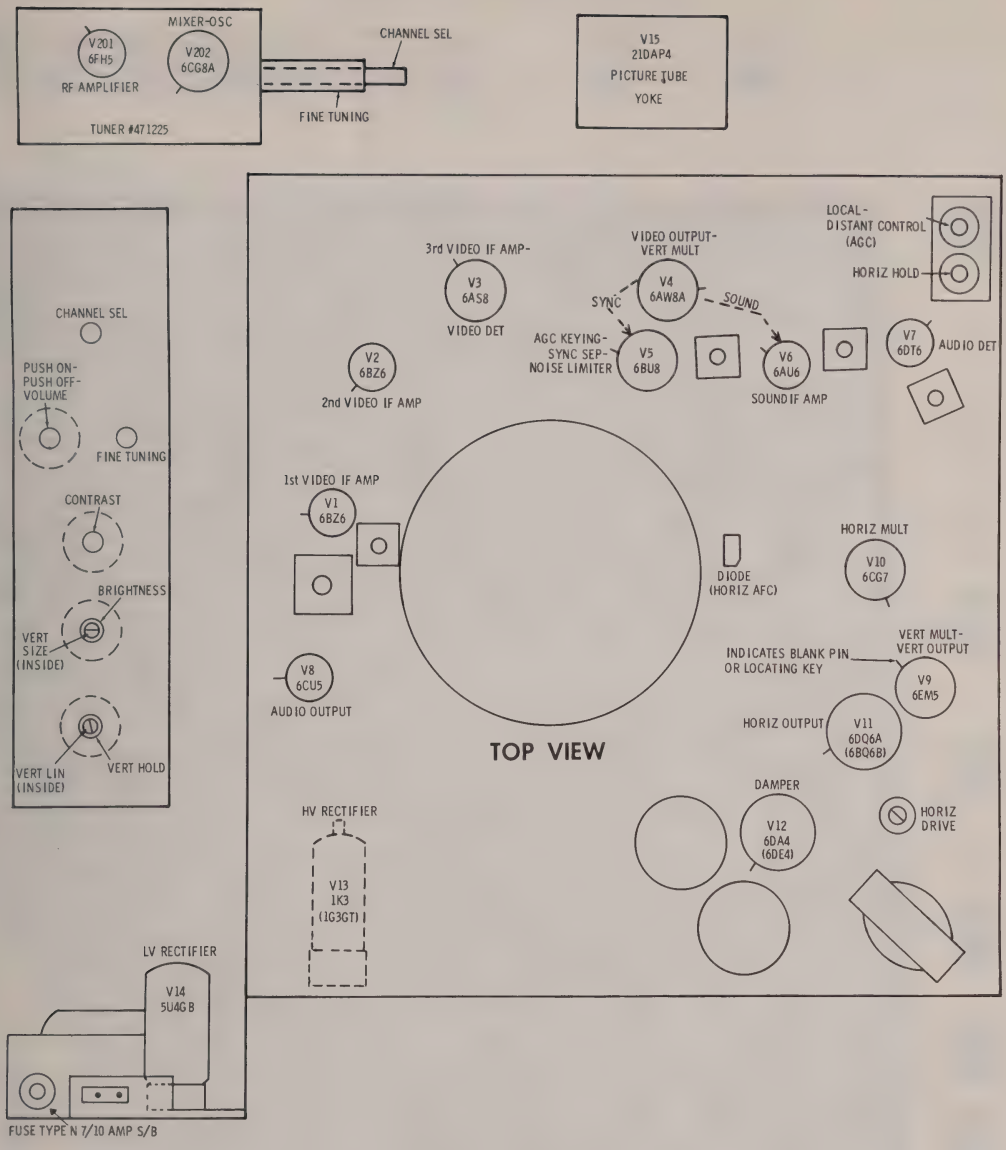
SET 502 FOLDER 1



EMERSON CHASSIS 120517E, 120518F, 120519C, 120520D, 120525E, 120526C, 471235

FOLDER 1

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound V14, Fuse (LV Supply)

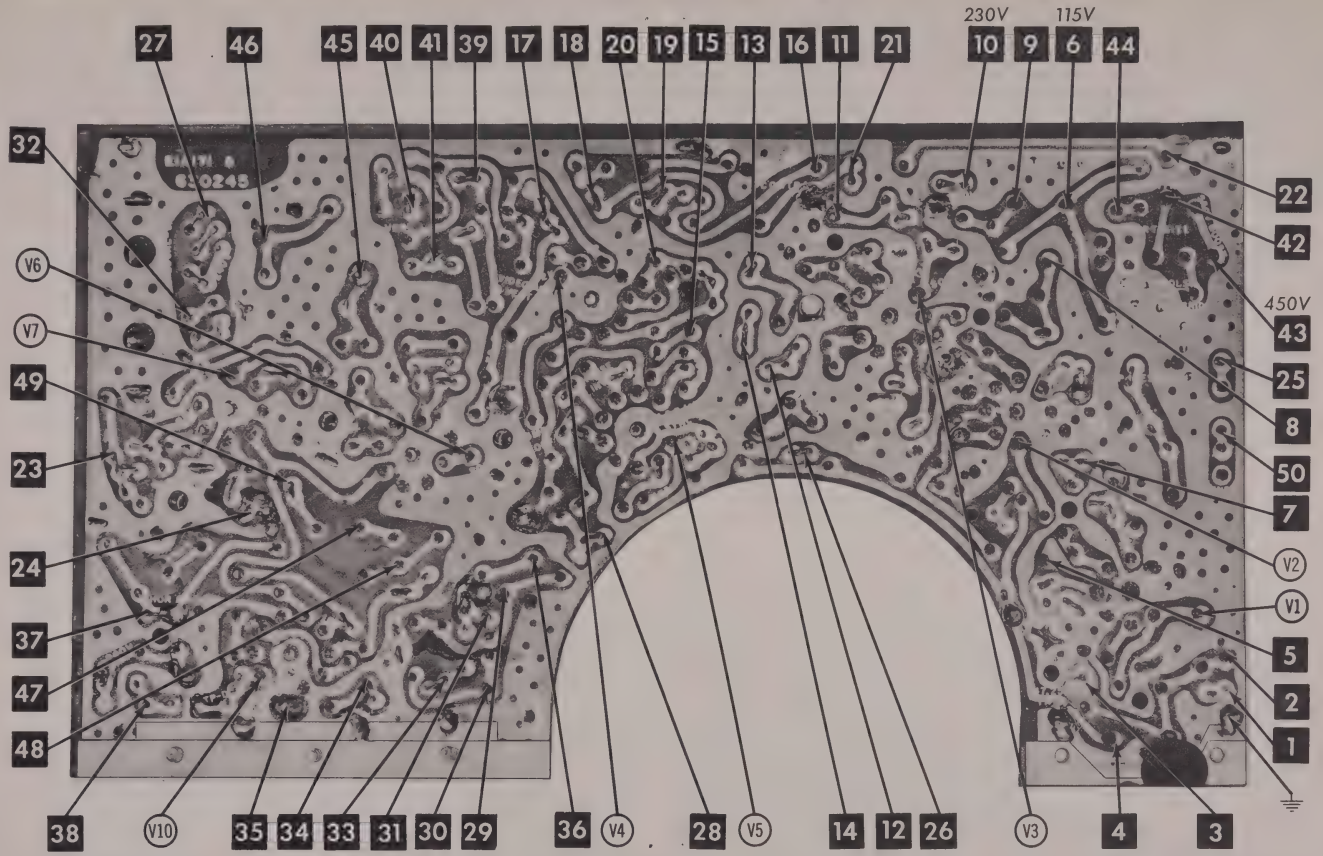
SWEEP FAILURE
No raster, has sound V10, V11, V12, V13, V14
No vertical deflection V4, V9
Poor vert. linearity or foldover V4, V9
Poor horiz. linearity or foldover V10, V11, V12
Narrow picture V10, V11, V12, V14
Vert. off freq. V4, V9
Horiz. off freq. Diodes (Horiz. AFC), V10

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, V3, V4
No pic, no sound, has snow V201, V202, V1
No pic, has sound, has raster V4, V15
Has pic, no sound V6, V7, V8
Overloaded picture V5

SYNC FAILURE
No vert. sync V5
No horiz. sync V5, (Diode, AFC)
No vert. or horiz. sync V5

EMERSON CHASSIS 120517E, 120518F, 120519C, 120520D, 120525E, 120526C, 471235

FOLDER 1



A Howard W. Sams CIRCUITRACE® Photo

TV PRINTED BOARD

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

FOLDER 1

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested alignment tools for all slugs (12) ..... General Cement #8282, 8606, 8606L or 9295.
Waisco #2543, 2544 or 2545

VIDEO IF ALIGNMENT

Connect the negative lead of a 3 volt bias supply to point Ⓐ. Positive to chassis.
Set the "Local-Distance" fully counterclockwise.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough generator output to provide a usable indication on VTVM.
Use only enough sweep generator output to provide a usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	Place a thin insulated metal strip between the Mixer-Osc. tube (V202), and tube shield . Connect the high side of sweep generator to the metal strip. Low side to chassis.	Not used	44.25MC	Any non-interfering channel	USE VTVM. DC probe to point Ⓑ. Common to chassis. (Across Video Det. load)	A1	Adjust for maximum deflection.
2.	"	"	"	45.3MC	"	"	A2	"
3.	"	"	"	42.6MC	"	"	A3	"
4.	"	"	"	41.25MC	"	"	A4	Adjust for MINIMUM deflection.
5.	"	"	"	47.25MC	"	"	A5	"
6.	"	"	"	45.3MC	"	"	A6	"
7.	"	"	"	45.3MC	"	"	Mixer Plate Coil	Adjust for maximum deflection.
8.	"	"	"	43.1MC	"	"	A6	Readjust for maximum deflection.
9.	"	"	45.0MC (10MC Swp)	45.75MC 47.25MC	"	USE SCOPE. Vert. Amp. thru 10K to point Ⓑ. Low side to chassis.		Check for response similar to Fig. 1. If necessary, repeat steps 1 thru 8.

4.5MC TRAP ALIGNMENT

Tune in a strong TV signal and adjust the Fine Tuning so that a 4.5MC beat pattern is visible in the picture. Adjust A7 for MINIMUM beat interference in the picture.

SOUND IF ALIGNMENT

Tune in a strong TV signal and adjust A8, A9 and A10 for maximum volume. Adjust A11 for maximum undistorted sound. If two peaks are obtained, use the one with the slug nearest the circuit board. With the antenna loosely coupled to the receiver to provide a weak signal, retouch A8, A9 and A10 for maximum undistorted sound.
Check sound on all available channels and if necessary, repeat sound alignment.

TUNER ALIGNMENT INSTRUCTIONS LOCATED ON PAGE 6.

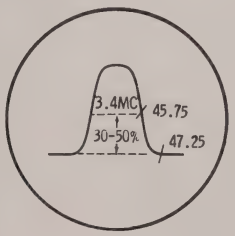


FIG. 1

TUNER ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested alignment tools: A201, A202 and A203.....GENERAL CEMENT #5000, 5003, 8276, 8290
WALSCO #2512, 2525
A204 thru A215.....GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989
WALSCO #2515, 2531, 2532

RF AND MIXER ALIGNMENT

Connect the negative lead of a 4.5 volt bias supply to point Ⓣ. Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	195MC	193.25MC 197.75MC	10	Vert. Amp. thru 10K to point Ⓣ. Low side to chassis	A201 A202 A203	Adjust A201 and A202 for maximum amplitude and symmetry with markers as shown in Fig. 201. Increase bias for MINIMUM amplitude of response curve. Without changing the bias adjust A203 to obtain MINIMUM response on the scope.
2.	"	"	213MC	211.25MC 215.75MC	13	"		Check for response similar to Fig. 201. If markers fall below 70% on any channel, make compromise adjustment of A201 and A202 with channel switch set to that channel. Check all other channels to see that they have not been seriously affected.
			207MC	205.25MC 209.75MC	12			
			201MC	199.25MC 203.75MC	11			
			195MC	193.25MC 197.75MC	10			
			189MC	187.25MC 191.75MC	9			
			183MC	181.25MC 185.75MC	8			
			177MC	175.25MC 179.75MC	7			
			85MC	83.25MC 87.75MC	6			
			79MC	77.25MC 81.75MC	5			
			69MC	67.25MC 71.75MC	4			
			63MC	61.25MC 65.75MC	3			
			57MC	55.25MC 59.75MC	2			

FIG. 201

VHF OSCILLATOR ALIGNMENT

Connect variable bias to IF AGC line. Adjust bias to obtain response curve which shows no indication of overloading.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the Fine Tuning to the center of its range.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
3.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 47K across video det. load.	A204	Adjust to place sound marker in trap notch as in Fig. 202. Video marker should fall at 50%.
			207MC	205.25MC 209.75MC	12		A205	
			201MC	199.25MC 203.75MC	11		A206	
			195MC	193.25MC 197.75MC	10		A207	
			189MC	187.25MC 191.75MC	9		A208	
			183MC	181.25MC 185.75MC	8		A209	
			177MC	175.25MC 179.75MC	7		A210	
			85MC	83.25MC 87.75MC	6		A211	
			79MC	77.25MC 81.75MC	5		A212	
			69MC	67.25MC 71.75MC	4		A213	
			63MC	61.25MC 65.75MC	3		A214	
			57MC	55.25MC 59.75MC	2		A215	

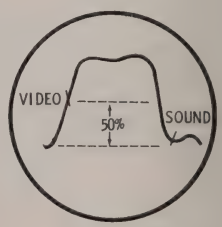
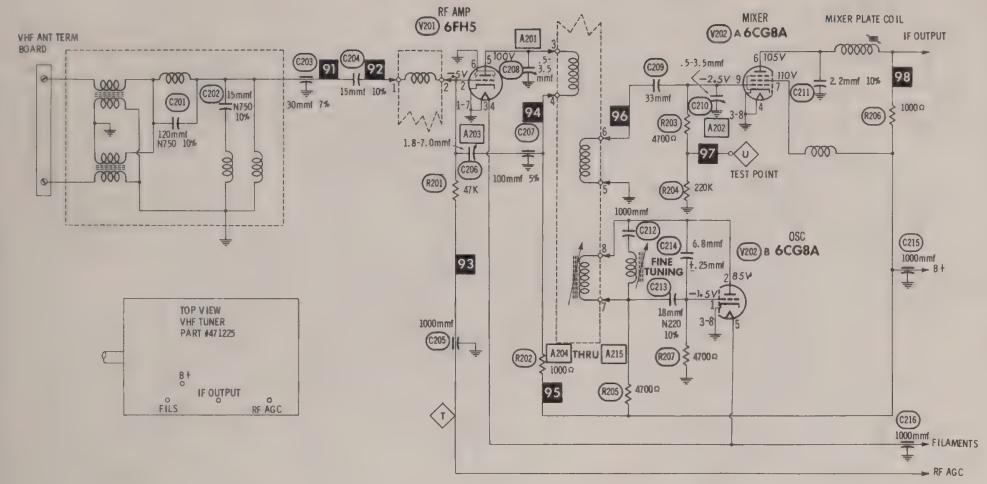


FIG. 202



A PHOTOFACT STANDARD NOTATION SCHEMATIC
with CIRCUITRACE
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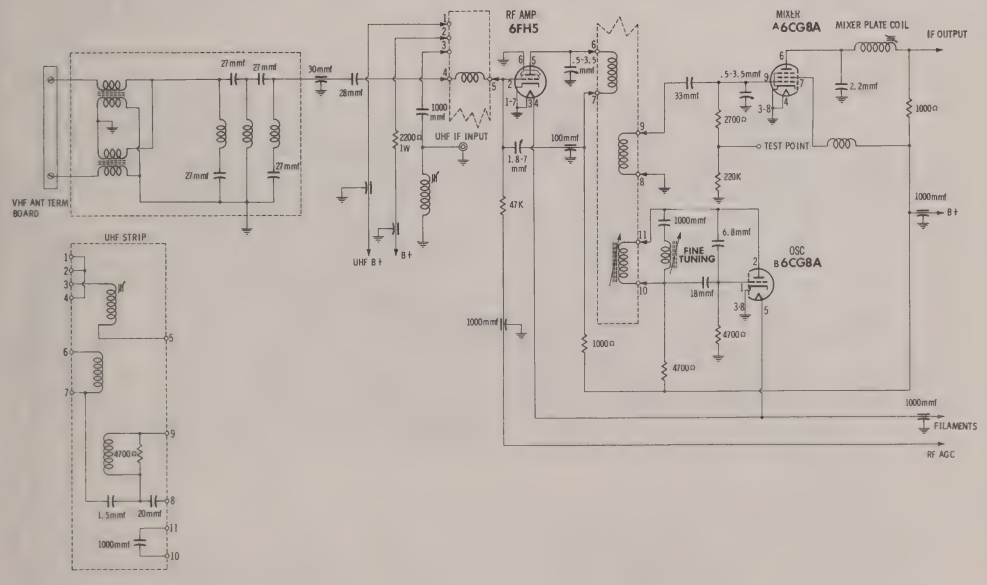
VHF TUNER 471225



A PHOTOFACT STANDARD NOTATION SCHEMATIC
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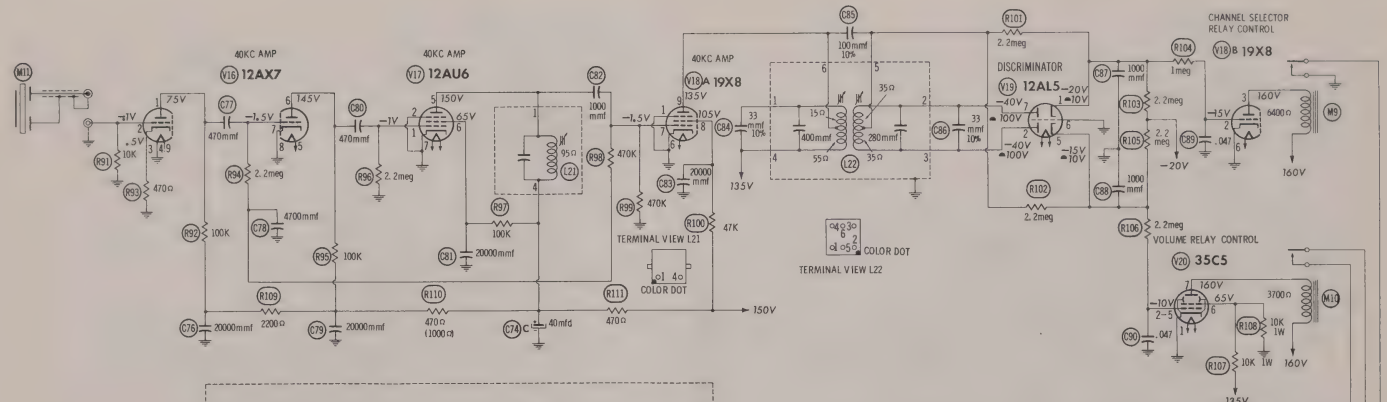
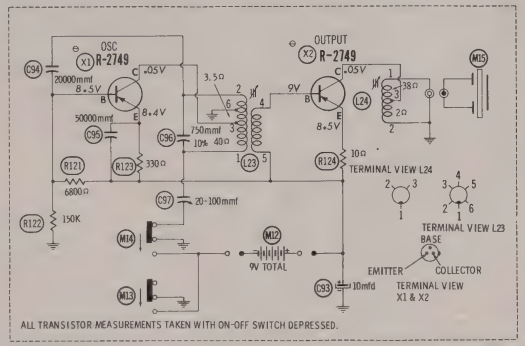
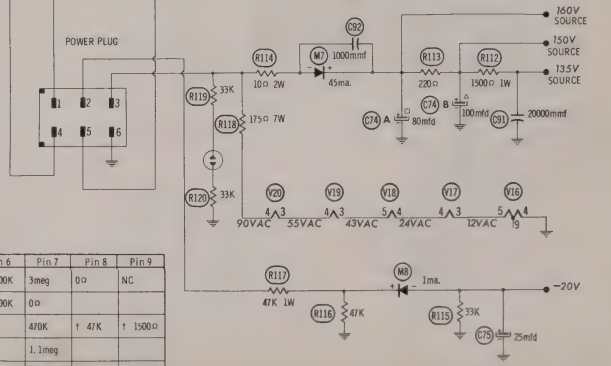
VHF TUNER with UHF Provisions - 471226







RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V16	12AX7	↑ 100K	10K	470Ω	0Ω	20Ω	↑ 100K	3meg	0Ω	NC
V17	12AU6	2.2meg	0Ω	20Ω	40Ω	↑ 700Ω	↑ 100K	0Ω		
V18	19X8	0Ω	3.2meg	↑ 6400Ω	40Ω	70Ω	0Ω	470K	↑ 47K	↑ 1500Ω
V19	12AL5	1.2meg	1.1meg	70Ω	90Ω	1.2meg	0Ω	1.1meg		
V20	35C5	0Ω	4.4meg	90Ω	125Ω	NC	↑ 8000Ω	↑ 3700Ω		

↑ MEASURED FROM OUTPUT OF M7. NC NO CONNECTION
• MEASURED WITH SIGNAL APPLIED.
RESISTANCE MEASUREMENTS FOR X1 AND X2 NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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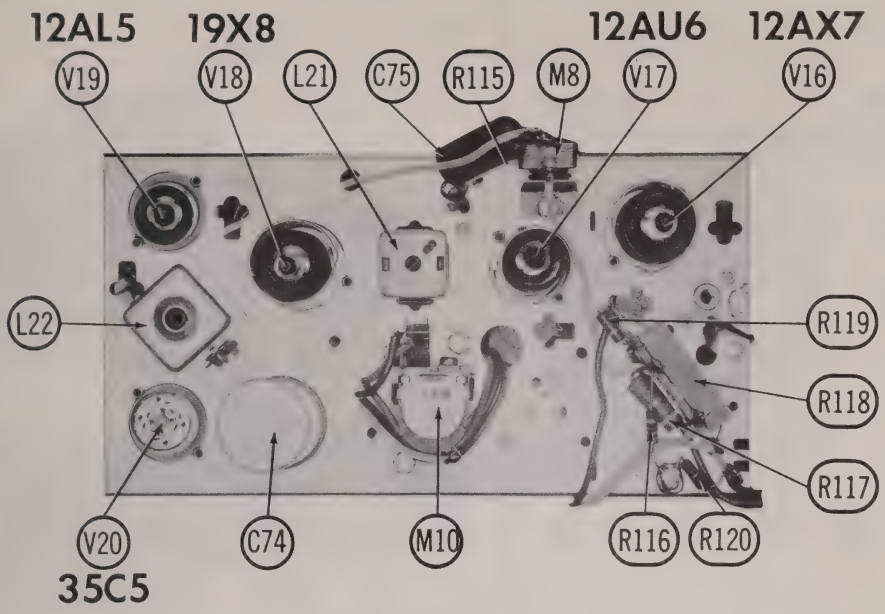
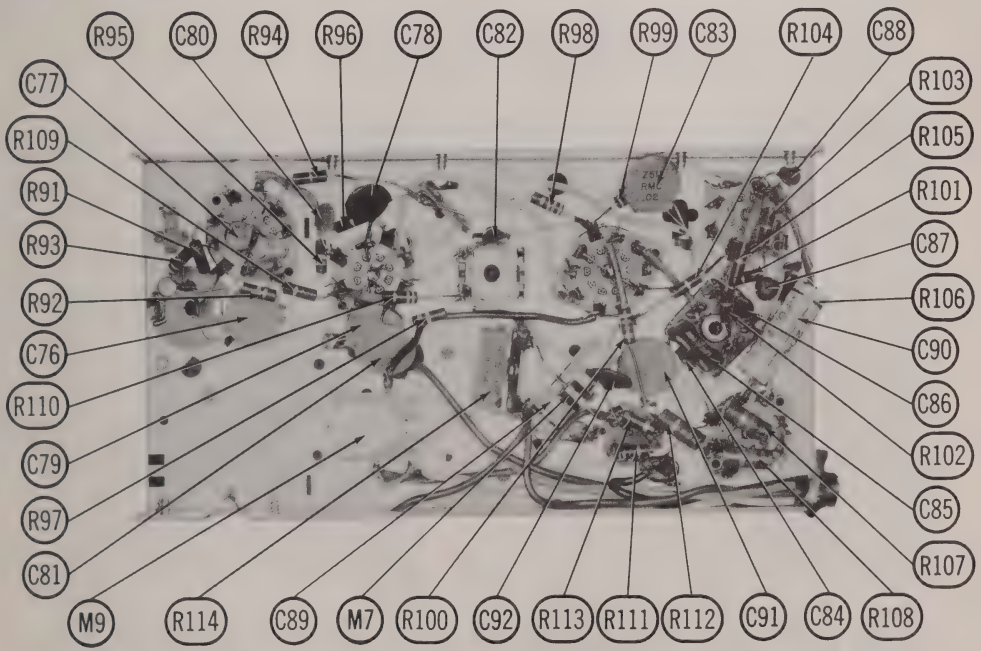
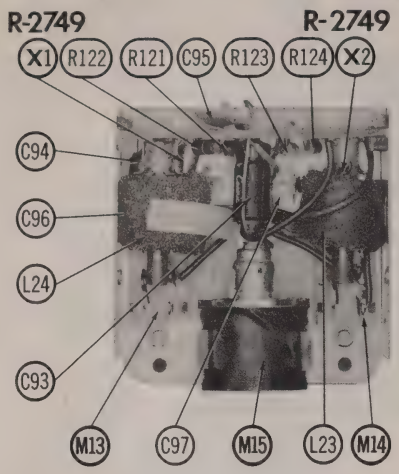
REMOTE CONTROL RECEIVER 471235 & TRANSMITTER



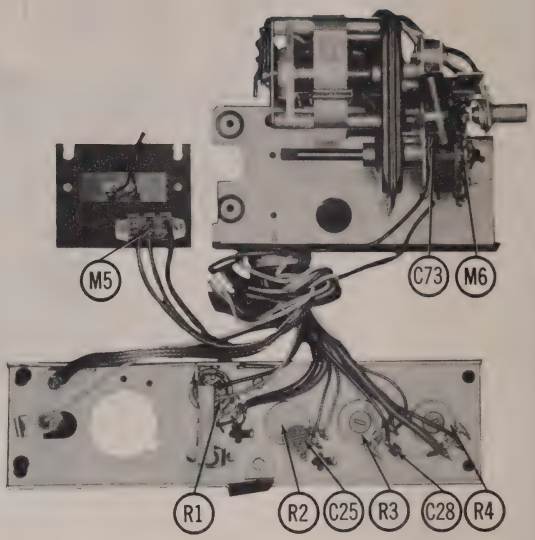
REMOTE CONTROL RECEIVER CH. 471235 - TOP VIEW



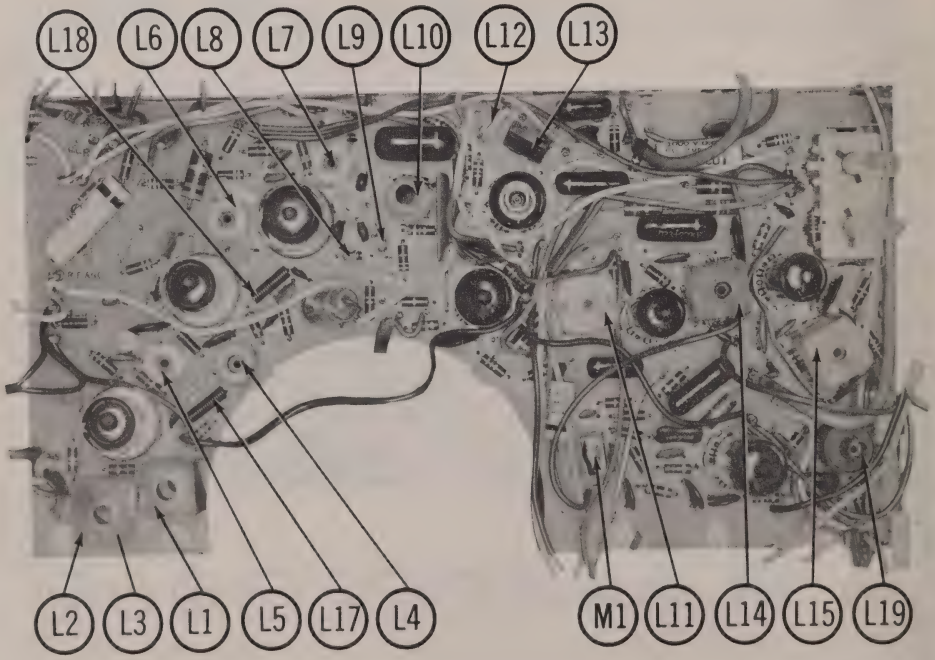
REMOTE CONTROL RECEIVER CH. 471235 - BOTTOM VIEW



REMOTE
CONTROL TRANSMITTER



CONTROL PANEL & POWER TUNING



TV PRINTED BOARD - INDUCTOR & MISC. IDENT.

TV PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE
V1	1st Video IF Amp.	6BZ6
V2	2nd Video IF Amp.	6BZ6
V3	3rd Video IF Amp. - Video Det.	6AS8
V4	Video Output - Vert. Mult.	6AW8A
V5	AGC Keying - Sync Sep. - Noise Limiter	6BU8
V6	Sound IF Amp.	6AU6
V7	Audio Det.	6DT6
V8	Audio Output	6CU5
V9	Vert. Mult. - Vert. Output	6EM5
V10	Horiz. Mult.	6CG7
V11	Horiz. Output	6DQ6A (6DQ8B) *
V12	Damper	6DA4 (6DE4) *
V13	HV Rectifier	1K3 (1G3GT) *
V14	LV Rectifier	5U4GB

* Alternate

PICTURE TUBE

ITEM No.	REPLACEMENT DATA					NOTES
	EMERSON PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
V15	21DAP4 17DTP4	21DEP4 ①	21DAP4 ① 17DTP4 ①	21DAP4 ①	21DAP4/21DEP4/ 21DEP4A ② 17DTP4 ②	① Aluminized ② Silver Screen "85"

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	EMERSON PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲80	300	925504	AFH3-114-80	C0890	FP333.2	TMT-3392	TVL-3639	①
B	■40	300							
C	▲100	50							
C2A	▲80	300	925503	AFH4-94-90	D0927	FP425.1	TMQ-4304	TVL-4635.7	①
B	▲40	300							
C	■40	300							
D	10	300							
C3	150	200	925512	PR1-075	BBRD0334	WS427	TD-150-300	TVAS-1447 *	①

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
① Some versions may use 4 section for C1A (80mfd @ 300V), C1B (40mfd @ 300V), C1C (100mfd @ 50V), and C2B (40mfd @ 300V), Pt. #925513; 3 section for C2A (80mfd @ 300V), C2C (200mfd @ 200V), C2D (10mfd @ 300V), Pt. #925514. C3 not used when C2C is 200mfd @ 200V.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING			REMARKS	REPLACEMENT DATA					
					AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C4	1000				BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C5	.22	200V			P288N-22		CUB2P22	2DP-4-224	GEM-2022	2TM-P22
C6	75	N750	5%	Note 1		DTN-75	C10Q75U		CN7-475	10TCU-Q75
C7	1000				BPD-001	DD-102	BYA10D1	CCD-102	B-110	5HK-D10
C8	1000				BPD-001	DD-102	BYA10D1	CCD-102	B-110	5HK-D10
C9	.47	200V			P288N-47		CUB2P47	2DP-5-474	GEM-2047	2TM-P47
C10	1000		10%		DI-1000	DD-102	5R5D1	CCD-102	GP210	10TS-D10
C11	47	NPO	10%		NPO-DI 47	DTZ-47	C10Q47C	CCTO-470	CNO-447	10TCC-Q47
C12	1000				BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C13	10000				BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C14	1000		10%		DI-1000	DD-102	5R5D1	CCD-102	GP210	10TS-D10
C15	820		10%		DI-820	DD-821	5R5T82	CCD-821	GP382	10TS-T82
C16	1000				BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C17	1000		10%		DI-1000	DD-102	BYA10D1	CCD-102	GP210	10TS-D10
C18	390		10%	(220) †	DI-390	DD-391	L10T39	CCD-391	GP339	10TS-T39
C19	1000		10%		DI-1000	DD-102	BYA10D1	CCD-102	GP210	10TS-D10
C20	8.2		10%		NPO-DI 8.2		C10V82C			10TCC-V82
C21	10		10%		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C22	4.7		10%		NPO-DI 4.7	DTZ-4R7	C10V47C	CCTO-4R7	CNO-547	10TCC-V47
C23	1000				BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C24	10000				BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C25	180	N750	10%	Note 1		TCN-180	C10T18U		CN7-318	10TCU-T18
C26	.1	400V			P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C27	1000			Note 2	BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C28	1000			Note 1	BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C29	.047	400V			P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C30	.022	400V			P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C31	4700				BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C32	4700				BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C33	820		10%		DI-820	DD-821	5R5T82	CCD-821	GP282	10TS-T82
C34	10000				BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C35	10000				BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C36	4.5	N750								
C37	10000				BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C38	10000				BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C39	10000				BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C40	15000				BPD-015	DD-153	BYA10S15	CCD-153	B-150	5HK-S15
C41	10000				BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C42	100		10%		DI-100	DD-101	L10T1	CCD-101	GP310	10TS-T10
C43	.022	400V			P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C44	4700				BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C45	.0039	1000V	10%		P1084CM-0039		DPMS16D4	16DP-2-402	GP239	10TM-D40
C46	.047	400V			P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C47	.01	400V	10%	Note 1	V84C4S1-10%		PM4S1	4DP-1-103	GEM-1611	4TM-S10
C48	1000		10%		DI-1000	DD-102	5R5T1	CCD-102	GP210	10TS-D10
C49	.033	600V			P668N-033	DD-303	CUB6S33	6DP-3-333	GEM-6133	6TM-S33
C50	.1	400V			P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10

TV PARTS LIST AND DESCRIPTIONS (Continued)

FIXED CAPACITORS (cont)

ITEM No.	RATING		REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C51	.02	10%		DI-83	DD-830	CD5Q83	CCD-830	GP483	10TS-Q83
C52	.02	10%		DI-83	DD-830	CD5Q83	CCD-830	GP483	10TS-Q83
C53	1000	10%		BPD-001	DD-102	BYA102K	CCD-102	B-102	61E-D10
C54	1000	10%		DI-1000	DD-102	SR5D1	CCD-102	GP110	10TS-D10
C56	1000	10%		DI-1000	DD-102	SR5D1	CCD-102	GP110	10TS-D10
C57	.047	200V		P388N-047	DD-503	CUB3S47	GDP-3-473	GEM-4547	57M-S47
C58	1000	10%		DI-1000	DD-102	SR5D1	CCD-102	GP110	10TS-D10
C59	100	10%		1488-0001	TCE-100	32SS71	CM-15B-101K	MC3S3S	M2-31
C59	.0047	600V	10%	V94C8D47-10%		PMSD47	SDP-1-473	GEM-15247	61M-D47
C60	30-150		Pt. #903091				424		
C61	100	10%		1488-0001	TCE-100	32SS71	CM-15B-101K	MC3S3S	M2-31S
C62	1000	10%		DI-1000	DD-102	SR5D1	CCD-102	GP110	10TS-D10
C63	1000	10%		DI-1000	DD-102	SR5D5	CCD-102	GP110	10TS-D10
C64	.0047	400V		P488N-0047	DS-472	CUB4S2	SDP-1-472	GEM-4247	57M-D47
C65	.1	400V		P488N-1	DP-104	CUB4P1	SDP-3-104	GEM-456	47M-P10
C66	.047	1000V		P1088N-047		CUB1G47	1SDP-5-473	GEM-10547	10TM-S47
C67	.47		10%	DS-470		DS-471	SDP-5-471	GP547	10TS-T47
C68	180	5000V	5%						
C69	1000		10%	DI-1000	DD-102	SR5D1	CCD-102	GP110	10TS-D10
C70	.033	600V		P686N-033	DD-303	CUB6S33	SDP-3-333	GEM-8133	57M-S33
C71	1000	1600V		DAC-8	DDE6-102	SCCD-102	DAC-102	BL-102	
C72	.68	3000V	10%					3DY-686	
C73	.047	600V		P688N-047	DD-503	CUB6S47	SDP-3-473	GEM-8547	57M-D47

Note 1. May not be used in some versions. Note 2. Not used in 17" Models. † Alternate Value.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: EMERSON PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS - IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg	½	290836	APL-70		PPQ13-1T1(SR)	PP18A	Volume Note 1
B	Shaft			AK-8		Not Req.	DS-37	
C	Switch			Not Req.		Not Req.	FA82R	Push-Push Off-On
R2A	500Ω	½	290832	F3-3		‡(A)-1396		Contrast Note 2
B	Shaft			Not Req.				
R3A	500K	½	290833	F1-40		‡(A)-1397	■ UK4180	Brightness Note 2
B	2.5meg			R1-78				Vert. Size (Height) Note 3
R4A	1meg	½	290834	F1-51		††(A)-1396	▲ UK4181	Vert. Hold Note 4
B	500K			R1-40				Vert. Linearity Note 4
R5	300	2(WW)	290825		39-50			Horiz. Drive
R6A	5meg	½	290830					AGC (Local-Distance)
B	10K							Horiz. Hold

■ "STA-LOC" Equivalent: FA551, R1551L, C8S25, 15S25.
▲ "STA-LOC" Equivalent: FA161, R1551, C8S25, 15S25.
† "Concentrix" Equivalent: K-6 Kit with Base Elements and Shafts: B1T-105, P1T-130
†† "Concentrix" Equivalent: K-6 Kit with Base Elements and Shafts: B1J-153, P1T-130 (Panel)
(Not available as a factory assembled unit). B1J-239, R1S-005 (Rear)
‡ "Concentrix" Equivalent: K-6 Kit with Base Elements and Shafts: B1J-137, P1T-130 (Panel)
(Not available as a factory assembled unit). B1J-153, R1S-005 (Rear)
Note 1. Some versions may use Part #390825. Note 3. Some versions may use Part #390826.
Note 2. Some versions may use Part #390827. Note 4. Some versions may use Part #390829.

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R7	15K	
R8	220Ω	(470Ω) *
R9	68K	
R10	1900Ω	
R11	33K	(47K) *
R12	470Ω	
R13	56Ω	
R14	470K	
R15	470Ω	
R16	47Ω	
R17	6800Ω 2W	
R18	470Ω	
R19	22K	Note 1
R20	1500Ω	
R21	470Ω	
R22	180Ω	
R23	6800Ω	
R24	39K	
R25	4700Ω	
R26	6800Ω	
R27	10K 1W	
R28	39K	
R29	39K	
R30	5000Ω 8W	Pt. #94239 IRC #PW10-5000C
R31	15Ω	
R32	560Ω	
R33	120K	Note 2
R34	22K	

ITEM No.	RATING	REMARKS
R35	470Ω	
R36	220Ω	
R37	220K	
R38	150K	
R39	560K	
R40	3500Ω	
R41	390Ω	
R42	1. 5meg	
R43	68Ω	
R44	1meg	
R45	470Ω 5W	Pt. #187149 IRC #PW5-470Ω
R46	47K	
R47	330K	
R48	470K	
R49	10K 1W	
R50	220K	
R51	100K	
R53	1. 5meg	
R55	15meg	
R54	100K	
R56	27K	
R57	56K	
R58	1meg	
R59	180K	
R60	33K	
R61	4. 7meg	
R62	1. 2meg	

ITEM No.	RATING	REMARKS
R63	3300Ω	
R64	270Ω 1W	
R65	2. 2meg	
R66	10K	(100Ω) *
R67	39K 1W	
R68	220K 1W	
R69	27000	
R70	560Ω	
R71	390Ω	
R72	220K	Note 3
R73	100K	
R74	1meg	
R75	100K	
R76	15K 1W	
R77	1200Ω	
R78	100K	
R79	47K	
R80	56K	
R81	5600Ω	
R82	3300Ω	(1000Ω) *
R83	100Ω	
R84	6800Ω 2W	
R85	3300Ω 1W	
R86	10K	
R87	0. 1Ω	Note 1
R88	220Ω 5W	Pt. #187135 IRC #PW5-220Ω
R89	470K	
R90	680K	

Note 1. May not be used in some versions. Note 3. Not used in 17" Models.
Note 2. 17" Models use 100K in this application. * Alternate Value.

COMPONENT COMBINATIONS

ITEM No	USE	DESCRIPTION	REPLACEMENT DATA: EMERSON PART No.
K1	Sync Sep. Screen	220mf, 10000mmf, 470K, 2. 2meg	923059
K2	Vert. Integrator	2000mmf, 4700mmf, 5000mmf, 5000mmf, 8200Ω, 8200Ω, 22K	923154

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: EMERSON PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	47. 25MC Trap	730317				
L2	1st Video IF	730316				
L3	RF Choke		SW-831	9310-38		8uh
L4	41. 25MC Trap	730315				
L5	2nd Video IF	730318				
L6	3rd Video IF	730319				
L7	4th Video IF	730318				
L8	RF Choke		SW-831	9310-38		8uh
L9	RF Choke		SW-831	9310-38		8uh
L10A	Series Peaking Coil		434	TV-184	VP-4	190uh
B	Shunt Peaking Coil		TV-306	6148		680uh
L11A	4. 5MC Trap	730364				
B	1st Sound IF					
L12	Shunt Peaking Coil	708351	TV-302	6136	VP-8	440uh
L13	Series Peaking Coil	708370	TV-187	6134	VP-8	300uh
L14	2nd Sound IF Trans.	730337				
L15	Quadrature Coil	730338		SW947	CCD-471	GP947	10TS-T47
L16	RF Choke	①		SC-588	6812		10uh	① IRC Part #CL-1
L17	Fil. Choke			SC-581	6803	VP-9	1uh	
L18	Fil. Choke			SC-581	6803	VP-9	1uh	

COILS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: EMERSON PART No.	Merit PART No.	Miller PART No.	Ram PART No.	Rogers PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L19	Horiz. Stabilizer	T08136A						RH-11 ①	

① Trim mounting lugs.

FILTER CHOKE

ITEM No.	RATINGS: CURRENT (Measured)	DC RES.	INDUCTANCE @ CURRENT	REPLACEMENT DATA: EMERSON PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
L20	.180A	28Ω	1000 "A" . 4 Hy.	737044			C-2343		C-27X	

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	SEC. 1	SEC. 2	REPLACEMENT DATA: EMERSON PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	117V	540VCT @ 1. 7A	5V ① 3A ② 3A	730094					R-98C	
	SEC. 3	SEC. 4	SEC. 5							
	6. 3V ① 6. 5A									

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: EMERSON PART No.	Merit PART No.	Ram PART No.	Rogers PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	Vert. Output	729171		V307	V034	A-8144	26S73 ①	A-108X	
T3	Alt. Vert. Output	729171							
	Vert. Horiz. (3NMH)	729287					Y-52 ②	Y-62 & NW2	
	(12G") Vert. (3NMH)	729171							
T4	Horiz. Output	T38163						D-187 *	

① Remove ground from yoke terminals #6 and #8; connect as autoformer.
② Use original rear cover and centering device and damping network if necessary. Connect yoke terminal #2 to horizontal output transformer #5; yoke terminals #4 and #3 to Resistor R86; yoke terminal #1 to horizontal output transformer #6; connect terminals #5 and #6 to ground.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

ORIGINAL TERMINAL CONNECTIONS	Merit Replacement Connections	Ram Replacement Connections	Rogers Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
8						8
5						5
3						4
7						3
9						6
1						1

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	SEC.	REPLACEMENT DATA: EMERSON PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T5	200Ω	3-4Ω	T34195	A-3025	AU-805	A-3332	24S53	S-20X	

SPEAKER

ITEM No.	TYPE: SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA: EMERSON PART No.	QUAM PART No.	NOTES
SP1	6"	PM	3-4Ω	180320 *	8A1	* Used in Models 1808, 1809, 1810
	4" x 6"	PM		180328 †		† Used in Models 1812, 1813, 1814
	3" x 5"	PM		180327 *		* Used in Models 1800, 1801, 1802, 1804, 1805

RECTIFIERS

ITEM No.	RATING: CURRENT (Measured)	REPLACEMENT DATA: EMERSON PART No.	ITT PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1		1810 *	K2413 *				* Dual Selenium Diode

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA: EMERSON PART No. FUSE	EMERSON PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M3	N	7/10A 135V			333. 750 (N 7/10A 135V	348010	N 7/10	HN 1/2 to 3/4
M3	1 1/2" length	#26 Wire						

MISCELLANEOUS

ITEM No.	PART NAME	EMERSON PART No.	NOTES
M4	Tuner	471235	VHF, STANDARD COIL REPLACEMENT #GG-4220A, Chassis 1205IRC & 1205SRC
	Tuner	471238	VHF, Chassis 1205ITF & 1205SRF
	Tuner	471236	VHF with UHF Provisions, Chassis 1205SOD
	Tuner	471239	VHF with UHF Provisions, Chassis 1205SIF
	Tuner	471237	UHF, Chassis 1205IRF & 1205SRD
M5	Switch		Remote Off-On (DPDT Slide Type)
M6	Power Tuning		Assembly
	Antenna	471237	Dipole, Models 1800, 1801
	Antenna	471247	Dipole, Model 1802

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Mask	461016B	Painted, Model 1808, 1812
Mask	461308	Painted, Model 1809, 1810, 1813, 1814
Mask	461359	Plastic, Model 1800, 1804
Mask	461373	Plastic, Model 1801, 1802, 1805
Lens	461358	Plastic, Model 1800, 1801, 1802, 1804, 1805
Glass	530366	Model 1808, 1809, 1810, 1812, 1813, 1814
Knob	400048	Channel Selector, VHF, Model 1800, 1801, 1802, 1804, 1805
Knob	400050	Channel Selector, VHF, Model 1808, 1809, 1810, 1812, 1813, 1814
Knob	400049	Channel Selector, UHF, Model 1800, 1801, 1802, 1804, 1805
Knob	461307B	Fine Tuning, Volume
Knob	460988A	Contrast, Brightness, Vertical Hold, Model 1800, 1801, 1802, 1804, 1805
Knob	461305	Contrast, Brightness, Vertical Hold, Model 1808, 1809, 1810, 1812, 1813, 1814
Knob	400051	Aprox. Gold, Model 1808, 1809, 1810, 1812, 1813, 1814
Handle	461371	Cabinet, Model 1800, 1801, 1802

WIRING DATA

High Voltage Lead	Use BELDEN No. 8869
Shielded Hook-up Wire	Use BELDEN No. 8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8874
300Ω Tuner Input Lead	Use BELDEN No. 8225
300Ω Antenna Lead-in	Use BELDEN No. 8230 or 8275
Antenna Rotor Cable	Use BELDEN No. 8484 (Flat) or 8494 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8486 (Round) - 8 Conductor

EMERSON CHASSIS 1205ITF, 1205IRF, 1205IRC, 1205SOD, 1205SIF, 1205SRC, 471235

FOLDER 1

REMOTE CONTROL RECEIVER PARTS LIST AND DESCRIPTIONS

TUBES

• GENERAL ELECTRIC •			RAYTHEON • SYLVANIA •		
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V16	40KC Amp.	12AX7	V19	Discriminator	12AL5
V17	40KC Amp.	12AU6	V20	Volume Relay Control	35C5
V18	40KC Amp. - Channel Sel. Relay Control	19X8			

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	EMERSON PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C74A	■80	175	925492	AFH3-13-70				TVL-2442.1	
B	▲100	175						TVA-1420	
C	40	160							
C75	25	50		PRS1340	BBR25-50	TC36	TD-25-50	TVA-1306	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C76	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C77	470		BPD-00047	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C78	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C79	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C80	470		BPD-00047	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C81	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C82	1000		BPD-001	DD-102	BYA10D1	CCD-103	B-210	5HK-D10
C83	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C84	33	10%	DI-33	DD-330	L10Q33	CCD-330	GP433	10TS-Q33
C85	100	10%	1469-0001	TCZ-100	22R5T1	CM-19B-101K	MCB235	MS-31
C86	33	10%	DI-33	DD-330	L10Q33	CCD-330	GP433	10TS-Q33
C87	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C88	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C89	.047	200V	P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C90	.047	200V	P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C91	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C92	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R91	10K	
R92	100K	
R93	470Ω	
R94	2.2meg	
R95	100K	
R96	2.2meg	
R97	100K	
R98	470K	
R99	470K	
R100	47K	

ITEM No.	RATING	REMARKS
R101	2.2meg	
R102	2.2meg	
R103	2.2meg	
R104	1meg	
R105	2.2meg	
R106	2.2meg	
R107	10K 1W	
R108	10K 1W	
R109	2200Ω	
R110	470Ω	(1000Ω) *

ITEM No.	RATING	REMARKS
R111	470Ω	
R112	1500Ω 1W	
R113	220Ω	
R114	10Ω 2W	
R115	33K	
R116	47K	
R117	47K 1W	
R118	175Ω 7W	IRC #PW10-175Ω
R119	33K	
R120	33K	

* Alternate value.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		EMERSON PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L21	40KC IF Trans.	720359				
L22	Discriminator	708366				

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					
	CURRENT (Measured)	EMERSON PART No.	ITT PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M7	.045A	817086 * or 817068	RE504	1N1764 *	2F4 *	SR200 *	* Silicon ♦ Selenium
M8	.001A	817084 ♦	1159 ♦		12 ♦		

MISCELLANEOUS

ITEM No.	PART NAME	EMERSON PART No.	NOTES
M9	Relay	515006 or 515005	Tuner
M10	Relay	515009 or 515012	Volume
M11	Transducer	825002 or 825003	Receiver

REMOTE CONTROL TRANSMITTER
PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	R-2749 *	Oscillator					PNP
X2	R-2749 *	Output					PNP

* Alternate Type 2N408 (Pt. #815058B).

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	EMERSON PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C93	10	25		XPP-25010	NLW10-25	TC22	ML10-25	TE-1204	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C94	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C95	50000		C80V503AM	DDA-503	H-05S5		TA-150	TG-S50
C96	750 10%		1469-00075		5R5T75	CM-19B-751K		MS-375
C97	20-100	Pt. #900197				423		

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R121	6800Ω	
R122	150K	

ITEM No.	RATING	REMARKS
R123	330Ω	

ITEM No.	RATING	REMARKS
R124	10Ω	

COILS (RF-IF)

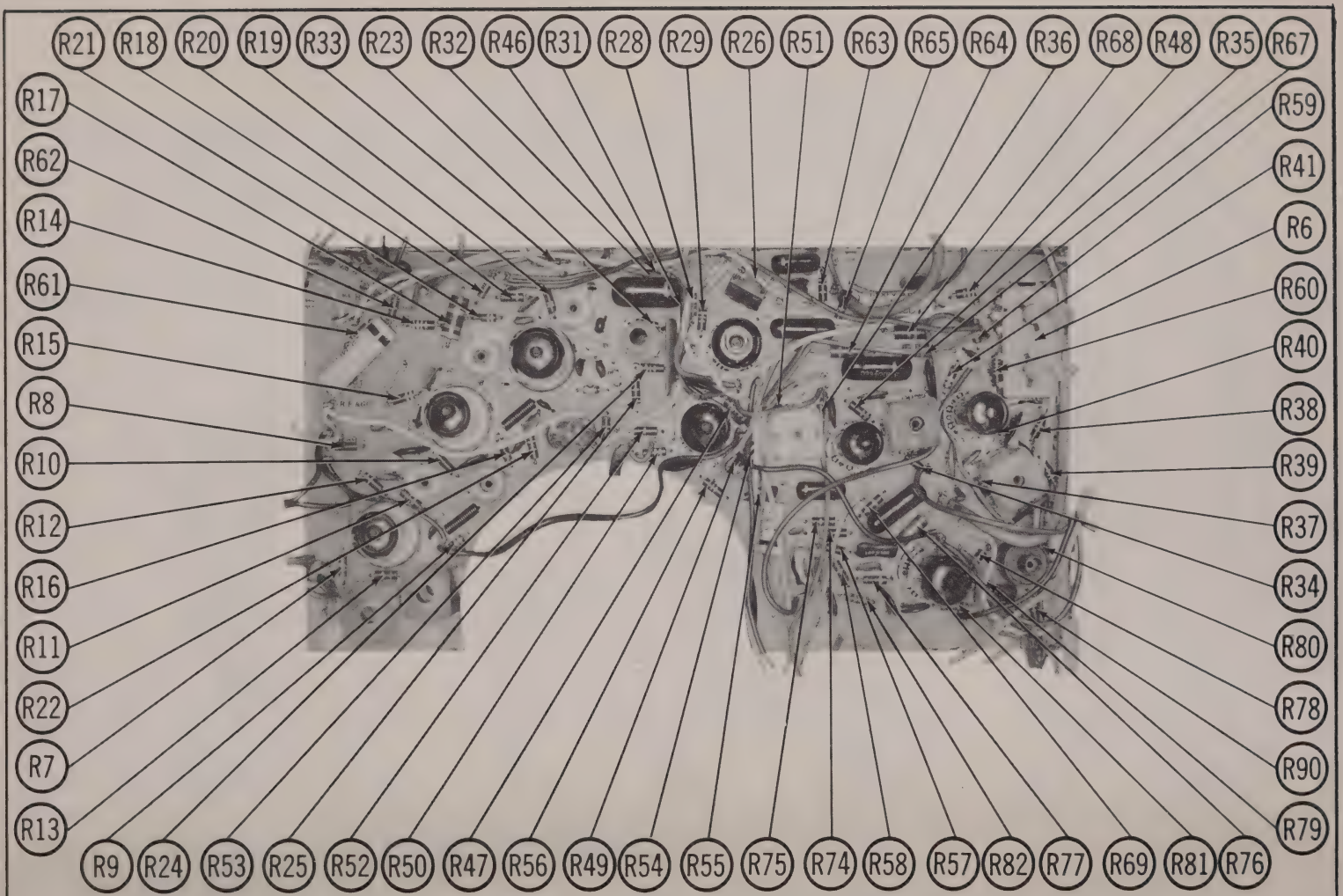
ITEM No.	USE	REPLACEMENT DATA				NOTES
		EMERSON PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L23	Output Coil	738166				
L24	Osc. Coil	716133				

BATTERIES

ITEM No.	VOLTAGE	EMERSON PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M12	9V			2U6		216		M-1604	

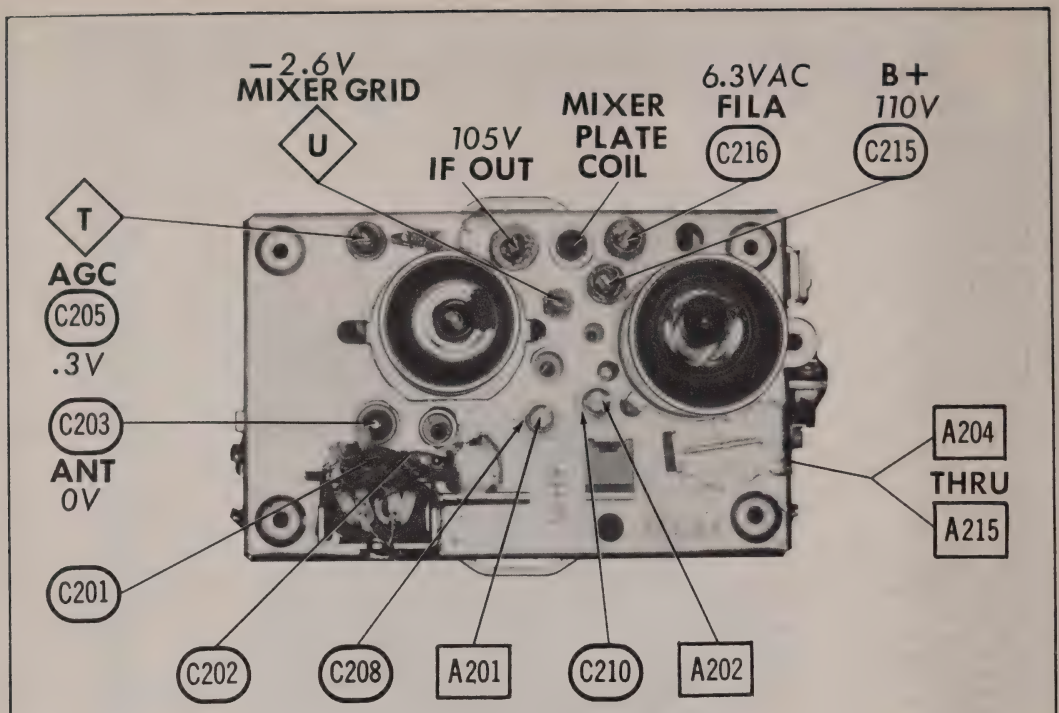
MISCELLANEOUS

ITEM No.	PART NAME	EMERSON PART No.	NOTES
M13	Switch	510171	Slide Type (Spring Return)
M14	Switch	510171	Slide Type (Spring Return)
M15	Transducer	825001	Transmitter

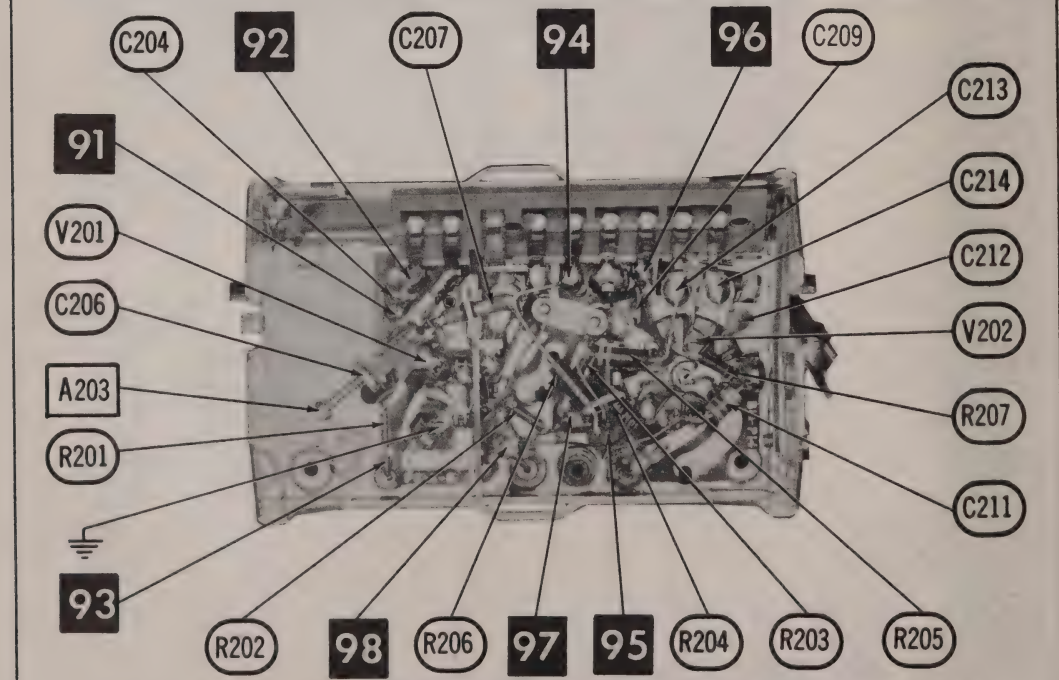


TV PRINTED BOARD - RESISTOR IDENT.

TV PRINTED BOARD - CAPACITOR & MISC. IDENT.



VHF TUNER 471225 - TOP VIEW



A Howard W. Sams CIRCUITRACE® Photo

VHF TUNER 471225
BOTTOM VIEW

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

TUNER PARTS LIST AND DESCRIPTIONS

471225

TUBES

• GENERAL ELECTRIC •			• RAYTHEON •		• SYLVANIA •
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V201	RF Amp.	6FH5	V202	Mixer - Osc.	6CG8A

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C201	120 N750 10%			TCN-120	C10T12U	CCTN-121	CN7-312	10TCU-T12
C202	15 N750 10%		N750-DI 15	DTN-15	C10Q15C	CCTN-150	CN7-415	10TCU-Q15
C203	30 7%							
C204	15 10%		DI-15	DD-150	L10Q15	CCD-150	GP415	10TS-Q15
C205	1000		EF-001	MFT-1000		CCF-102	CT280A	
C206	1.8-7.0			829-7				
C207	100 5%							
C208	.5-3.5							
C209	33		DI-33	DD-330	L10Q33	CCD-330	GP433	10TS-Q33
C210	.5-3.5							
C211	2.2 10%		NPO-SI 2.2	TCZ-2.2	C10V22C	CCTO-2R2	CNO-522	10TCC-V22
C212	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	10TS-D10
C213	18 N220 10%					*		10TCR-Q18
C214	6.8 ±.25mmf		NPO-DI 6.8	DTZ-6R8	C10V68C	CCTO-6R8	CNO-568	10TCC-V68
C215	1000		EF-001	MFT-1000		CCF-102	CT280A	
C216	1000		EF-001	MFT-1000		CCF-102	CT280A	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

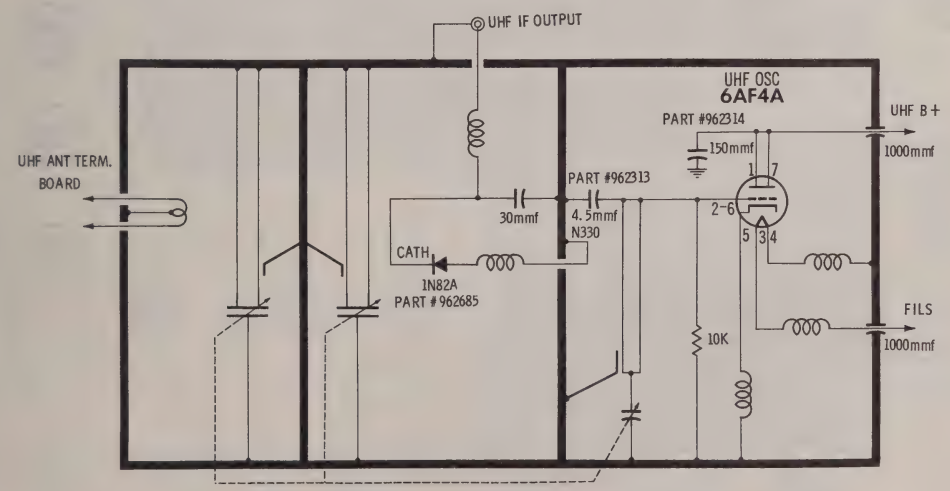
RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R201	47K	
R202	1000Ω	
R203	4700Ω	

ITEM No.	RATING	REMARKS
R204	220K	
R205	4700Ω	
R206	1000Ω	

ITEM No.	RATING	REMARKS
R207	4700Ω	



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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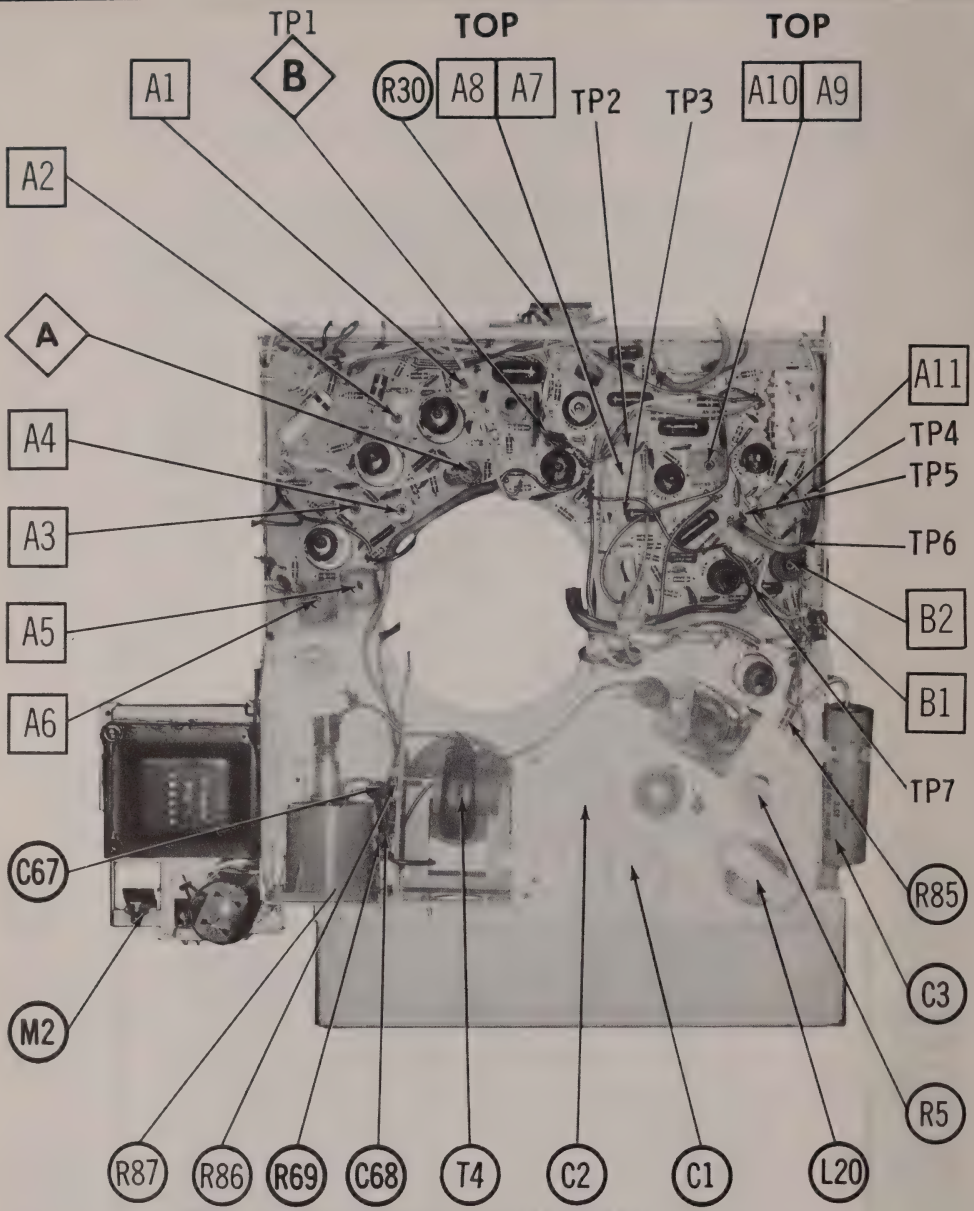
UHF TUNER 471227

EMERSON CHASSIS 120517E, 120518F, 120519C, 120520D, 120525E, 120526C, 471235

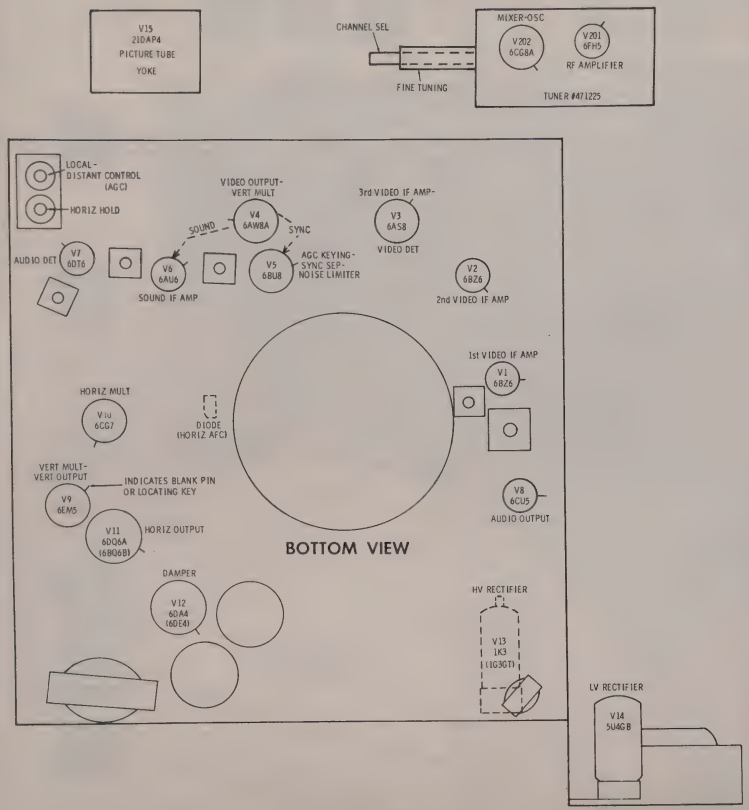
FOLDER 1



TP1	-.8V	VIDEO OUTPUT GRID
TP2	70V	VIDEO OUTPUT PLATE
TP3	160V	SYNC SEP PLATE
TP4	-9V	AUDIO DET (QUAD COIL)
TP5	0V	AUDIO OUTPUT GRID
TP6	230V	HORIZ MULT PLATE
TP7	150V	HORIZ MULT (OUTPUT) PLATE

TV CHASSIS - TOP VIEW

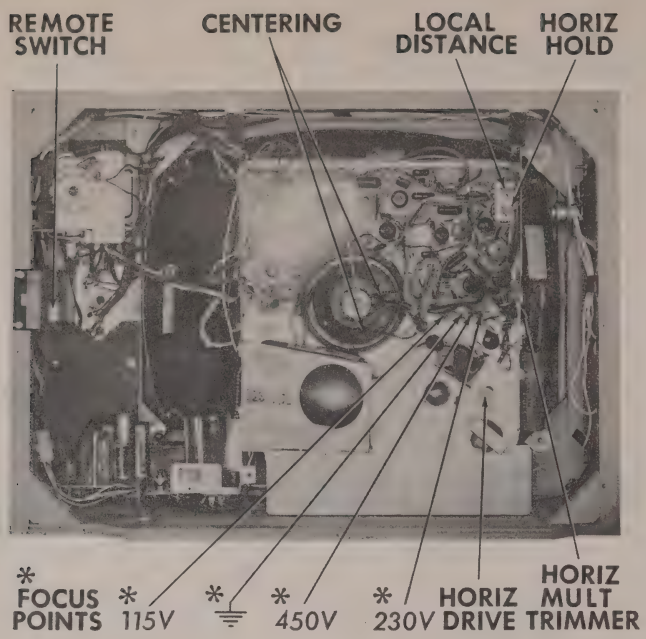
TUBE PLACEMENT CHART



RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BZ6	68K	56Ω	0Ω	.1Ω	▪ 470Ω	▪ 470Ω	0Ω		
V2	6BZ6	70K	47Ω	.1Ω	0Ω	† 7500Ω	▪ 470Ω	0Ω		
V3	6AS8	▪ 470Ω	.1Ω	180Ω	.1Ω	0Ω	4700Ω	0Ω	.1Ω	† 2200Ω
V4	6AW8A	0Ω	● 1.2meg	●† 6.8meg	0Ω	.1Ω	● 200Ω	4700Ω	† 10K	† 5000Ω
V5	6BU8	▪ 0Ω	† 10K	290K	0Ω	.1Ω	40K	† 210K	† 100K	▪ 2.7meg
V6	6AU6	1.5Ω	0Ω	0Ω	.1Ω	▪ 470Ω	▪ 470Ω	220Ω		
V7	6DT6	5.5Ω	390Ω	0Ω	.1Ω	† 220K	▪ 3300Ω	560K		
V8	6CU5	¶	500K	0Ω	.4Ω	NC	† 548Ω	† 660Ω		
V9	6EM5	† 250Ω	TP	NC	.1Ω	0Ω	● 2.4meg	270Ω	NC	† 410Ω
V10	6CG7	† 47K	100K	1200Ω	0Ω	.1Ω	† 15K	3.5meg	1200Ω	0Ω
V11	6DQ6A	TP	0Ω	NC	† 7000Ω	680K	TP	.1Ω	● 0Ω	TOP CAP † 13Ω
V12	6DA4	NC	NC	¶	NC	† 30Ω	NC	.1Ω	0Ω	
V13	1K3	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP † 420Ω
V14	5U4GB	NC	¶	NC	23Ω	NC	21Ω	TP	¶	
V15	21DAP4	.1Ω	22K	† 100K	† 250Ω	NC	NC	● 210K	0Ω	
V201	6FH5	0Ω	1.8meg	0Ω	.1Ω	▪ 1300Ω	0Ω	0Ω		
V202	6CG8A	4700Ω	▪ 5000Ω	0Ω	0Ω	.1Ω	▪ 1300Ω	▪ 300Ω	0Ω	225K
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	P i n 7	Pin 8	Pin 9

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
● THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
† MEASURED FROM PIN 8 OF V14.
‡ MEASURED FROM PIN 3 OF V12.
▪ MEASURED FROM PIN 1 OF V8.
NC NO CONNECTION
TP TIE POINT



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Tune in a TV signal and set the "Local-Distance" (AGC) Control fully counterclockwise.

Connect a clip lead across the Horizontal Stabilizer Coil (L19). Connect another clip lead from TP3 to chassis. Set Horizontal Hold to center of its range.

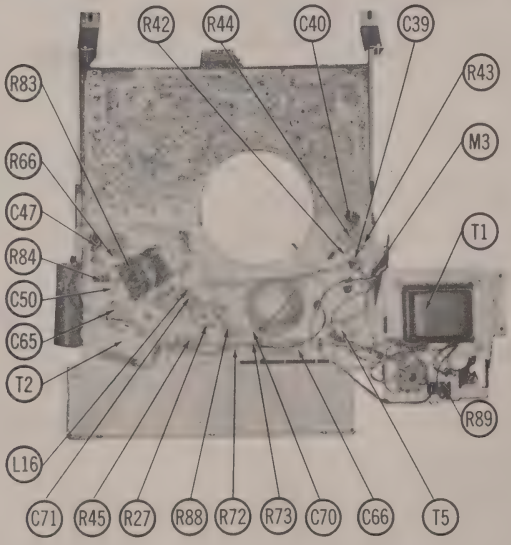
Adjust the Horizontal Mult. Trimmer (B1) until picture synchronizes horizontally. In most cases the picture will appear to float back and forth across the screen.)

Remove the clip lead from L19. Adjust the Horizontal Stabilizer Coil (Freq Slug B2) until the picture again synchronizes horizontally.

Remove the clip lead from TP3 and chassis. The picture should then lock in solid.

Set the Horizontal Drive as far counterclockwise as possible without the presence of a vertical white line (drive line) or compression near the center of the raster.

Insufficient width may be corrected by connecting a jumper across (R85).



TV CHASSIS—FRONT VIEW

PHOTOFACT® Folder

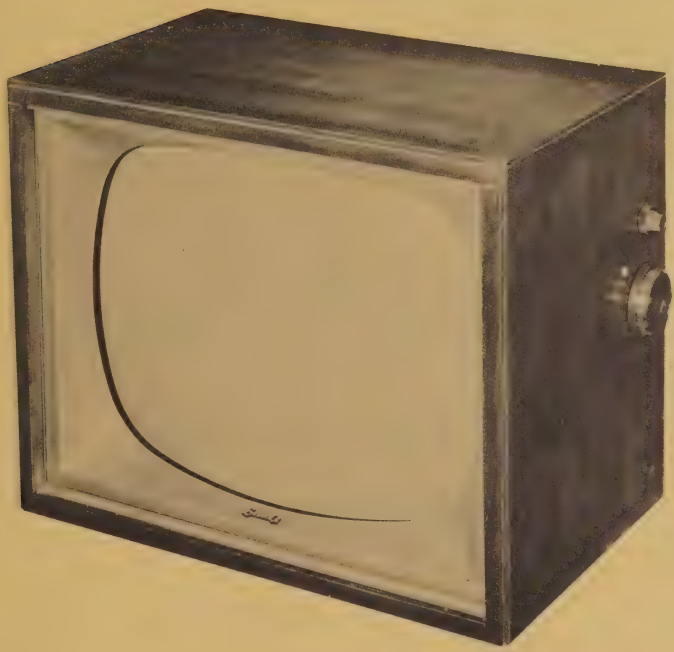
SONORA MODELS S60K212, S60LB214, S60T211 (Ch. 1150-100)

IMPORTANT FILING NOTICE

The TV Folder for this envelope will be found among the first folders in this complete Set of folders.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

SONORA MODELS S60K212, S60LB214, S60T211 (Ch. 1150-100)



MODEL S60T211

SONORA MODELS S60K212, S60LB214, S60T211 (Ch. 1150-100)

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1960 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

PHOTOFACT® Folder

SONORA MODELS S60K212, S60LB214, S60T211 (Ch. 1150-100)

SONORA MODELS S60K212, S60LB214, S60T211 (Ch. 1150-100)

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL MODEL S60T211

1. Remove 10 wood screws holding rear cover. Remove rear cover.
2. Remove 4 push-on type knobs at side of cabinet.
3. Remove screw (under channel selector knob) and 2 screws inside cabinet holding (tuner and on-off switch) mounting bracket.
4. Remove 5 bolts holding chassis and picture tube mounting board assembly to cabinet.
5. Remove mounting board assembly.

PICTURE TUBE REMOVAL

It is necessary to remove the mounting board assembly for picture tube removal. (See "Chassis Removal".)

MODEL S60T211

CAUTION

ONE SIDE OF AC LINE CONNECTED TO CHASSIS.

Care should be exercised when connecting test equipment or physically contacting chassis. Isolation devices employed by manufacturer should be checked and properly connected before returning receiver to owner.

TRADE NAME	Sonora Models S60K212, S60LB214, S60T211 (Ch. 1150-100)
SUPPLIER	Park Radio Service, Inc., 130 Cedar Street, New York 6, N. Y.
TYPE SET	Television Receiver
TUBES	VHF - Sixteen
POWER SUPPLY	110-120 Volts AC, 60 Cycle RATING 145 Watts, 1.35 Amp. @ 117 Volts AC
TUNING RANGE	Channel 2 thru 13 VHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

SERVICING IN THE FIELD

SAFETY GLASS REMOVAL

Remove 4 screws holding the trim strip at the top edge of the safety glass. Tilt glass out and remove.

FUSE DEVICE

A 5.6Ω fusible resistor is used for low voltage power supply protection. (For location, see "Tube Placement Chart".)

TUNER OSCILLATOR ADJUSTMENT

To touch up the VHF Oscillator, it is necessary to remove the rear cover. The adjustments are accessible thru a hole in the right side of the tuner rear cover as viewed from the rear of the tuner.

AGC

The AGC may be varied by means of an AGC control. (For location, see "Tube Placement Chart".)

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

The Horizontal Frequency Slug is used for the Horizontal Hold. (For location, see "Tube Placement Chart".)

CENTERING

Centering is accomplished by 2 magnetic rings, located behind the yoke, on the neck of the picture tube.

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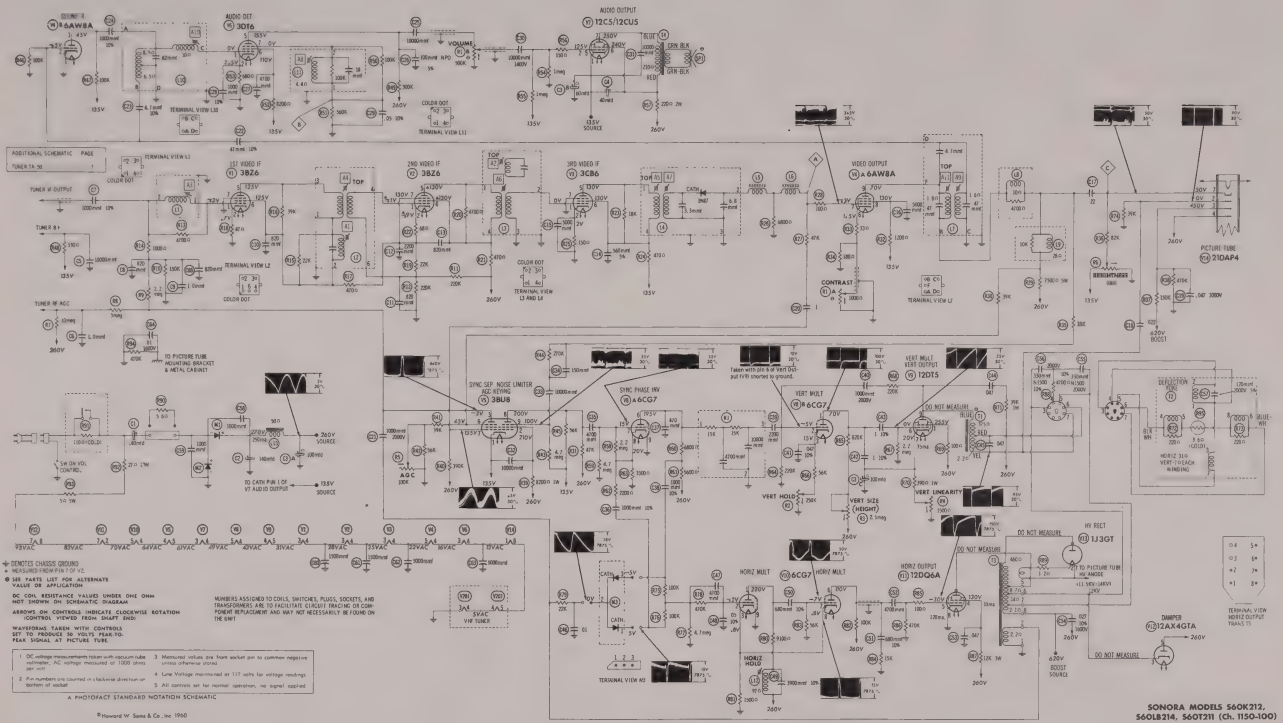
KA296

SET 502 FOLDER 2


SONORA MODELS S60K212, S60LB214, S60T211 (Ch. 1150-100)
DENOTES CHASSIS GROUND
MEASURED FROM PIN 7 OF V2.
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION CONTROL VIEWED FROM SHAFT END.
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT
1. DC voltage measurements taken with vacuum tube voltmeter, AC voltage measured at 1000 ohms per volt
2. Pin numbers are counted in a clockwise direction on bottom of socket
3. Measured voltage are from socket pin to common negative (unless otherwise stated)
4. Line Voltage maintained at 117 volts for voltage readings
5. All controls set for normal operation, no signal applied
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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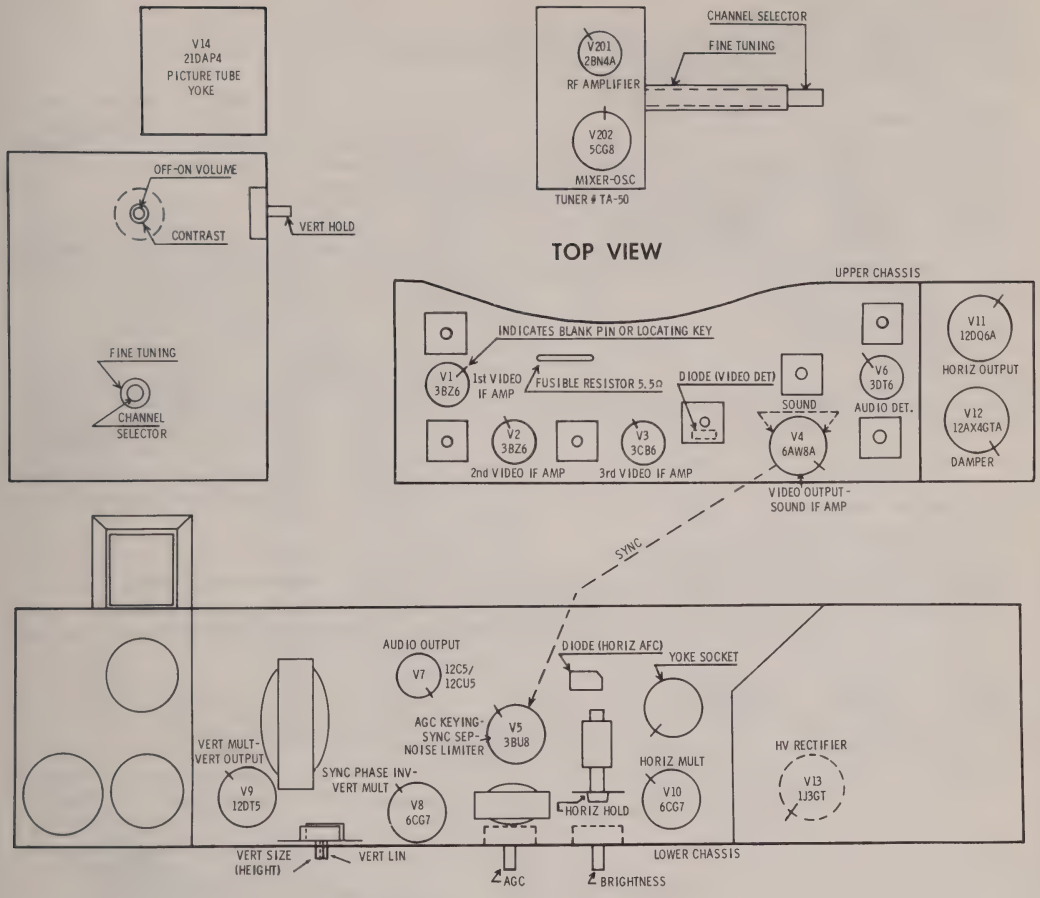
SONORA MODELS S60K212, S60LB214, S60T211 (Ch. 1150-100)

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

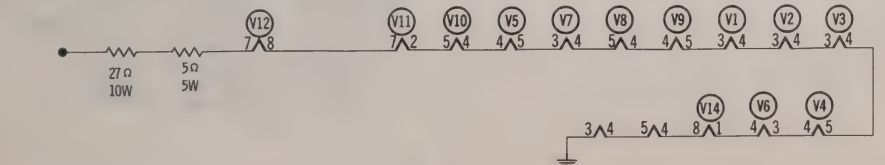
POWER SUPPLY FAILURE
No raster, no sound Fusible Resistor, Rectifiers (B+)

SWEEP FAILURE
No raster, has sound V10, V11, V12, V13, V14
No vertical deflection V8, V9
Poor vert. linearity or foldover V8, V9
Poor horiz. linearity or foldover V10, V11, V12
Narrow picture Rectifiers (B+), V10, V11, V12
Vert. off freq. V8, V9
Horiz. off freq. Diode (Horiz. AFC), V10

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, V3, Diode (Video Det.), V4
No pic, no sound, has snow V201, V202, V1
No pic, has sound, has raster V4, V14
Has pic, no sound V4, V6, V7
Overloaded picture V5

SYNC FAILURE
No vert. sync V5, V8
No horiz. sync V5, V8
No vert. or horiz. sync V5, V8

This receiver employs tubes used in a series filament network, an open filament in any tube will cause the set to be inoperative. (See circuit below.)



SET 502 FOLDER 2

SONORA MODELS S60K212, S60LB214, S60T211 (Ch. 1150-100)

FOLDER 2

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

Use an ISOLATION TRANSFORMER TO PROTECT the Test Equipment.
The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: GENERAL CEMENT #8282, 8606, 8606L, 9295
WALSCO #2526, 2543, 2544, 2545

VIDEO IF ALIGNMENT

Set Contrast fully clockwise.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	Place a thin insulated metal strip between the Mixer-Osc. tube (V202), and tube shield. Connect the high side of sweep generator to the metal strip. Low side to chassis.	44MC (10MC Swp)	41.25MC	Any non-interfering channel	Vert. Amp. thru 47K to point (A). Low side to chassis. (Across Video Det. load)	A1	Adjust to place marker in 41.25MC trap notch. (See Fig. 1).
2.	"	"	"	47.25MC	"	"	A2	Adjust to place marker in other trap notch.
3.	"	"	"	42.75MC 45.75MC	"	"	Mixer Plate Coil & A3 thru A7	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown. Adjust Mixer Plate Coil and A3 for maximum gain. A4 and A5 to shape high frequency side of response curve. A6 and A7 is adjusted to shape low frequency side.

SOUND IF ALIGNMENT

Connect an output meter across speaker voice coil.
Connect the DC probe of the VTVM to point (B). Common to chassis. Tune in a strong air signal and adjust A8 for maximum output. If two peaks occur during this adjustment, use the one resulting in the highest reading on the VTVM.
Reduce the signal strength by disconnecting the antenna. Adjust A9 and A10 for maximum undistorted sound. Further reduce the signal by moving the antenna lead further away. Retouch A9 and A10 for maximum undistorted sound. Repeat entire procedure if necessary.

4.5MC TRAP ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
4.	.05mfd	High side to point (A). Low side to chassis.	4.5MC (Unmod)	Any non-interfering channel	AC probe to point (C). Common to chassis. (Use 0-10VAC scale).	A11	Adjust for MINIMUM deflection.

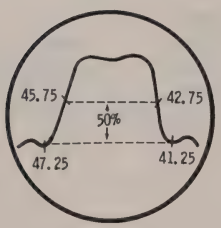
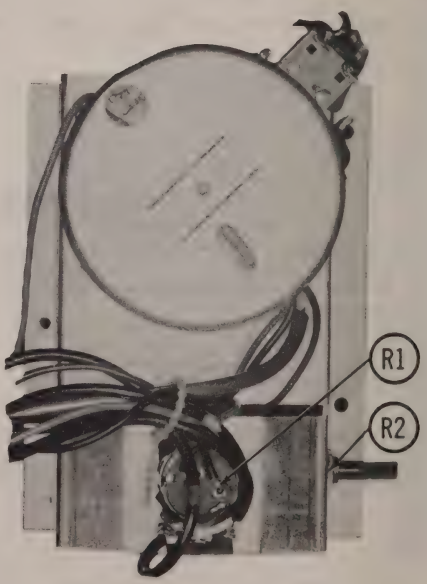


FIG 1



TUNER & CONTROL PANEL

TUNER ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: A201 thru A212 ..... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8987
WALSCO #2531
A213, A214, A215..... GENERAL CEMENT #5000, 5003, 8276, 8290
WALSCO #2512, 2525

VHF OSCILLATOR ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Connect variable bias to IF AGC line. Adjust bias to obtain response curve which shows no indication of overloading.
Set the Fine Tuning to the center of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 47K across Video Det. load.	A201	Adjust to place sound marker in trap notch as in Fig. 201. Video marker should fall at 50%.
			207MC	205.25MC 209.75MC	12		A202	
			201MC	199.25MC 203.75MC	11		A203	
			195MC	193.25MC 197.75MC	10		A204	
			189MC	187.25MC 191.75MC	9		A205	
			183MC	181.25MC 185.75MC	8		A206	
			177MC	175.25MC 179.75MC	7		A207	
			85MC	83.25MC 87.75MC	6		A208	
			79MC	77.25MC 81.75MC	5		A209	
			69MC	67.25MC 71.75MC	4		A210	
			63MC	61.25MC 65.75MC	3		A211	
			57MC	55.25MC 59.75MC	2		A212	

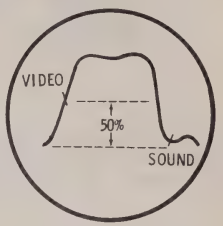


FIG. 201

VHF RF AND MIXER ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Coils not containing adjustable cores are adjusted by expanding or compressing coil turns.
Connect the negative lead of a 4.5 volt bias supply to point (T). Positive to chassis.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
2.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	195MC	193.25MC 197.75MC	10	Vert. Amp. thru 10K to point (U). Low side to chassis.	A213, A214, A215	Adjust A213 and A214 for maximum amplitude and symmetry with markers as shown in Fig. 202. Increase bias for MINIMUM amplitude of response curve. Without changing the bias adjust A215 to obtain MINIMUM response on the scope. Restore bias.
3.	"	"	213MC	211.25MC 215.75MC	13	"	A216	Adjust for maximum amplitude of response similar to Fig. 202. Adjust by compressing or expanding coil turns.
			207MC	205.25MC 209.75MC	12		A217	
			201MC	199.25MC 203.75MC	11		A218	
			195MC	193.25MC 197.75MC	10		A219	
			189MC	187.25MC 191.75MC	9		A220	
			183MC	181.25MC 185.75MC	8		A221	
			177MC	175.25MC 179.75MC	7		A222	
			85MC	83.25MC 87.75MC	6		A223	
			79MC	77.25MC 81.75MC	5		A224	
			69MC	67.25MC 71.75MC	4		A225	
			63MC	61.25MC 65.75MC	3		A226	
			57MC	55.25MC 59.75MC	2		A227	

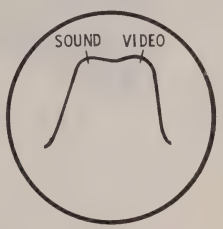
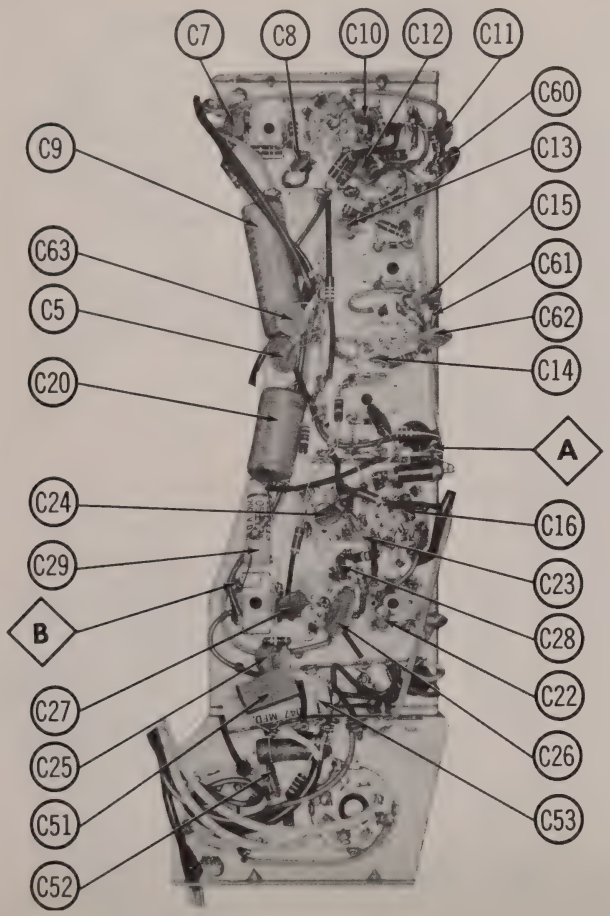
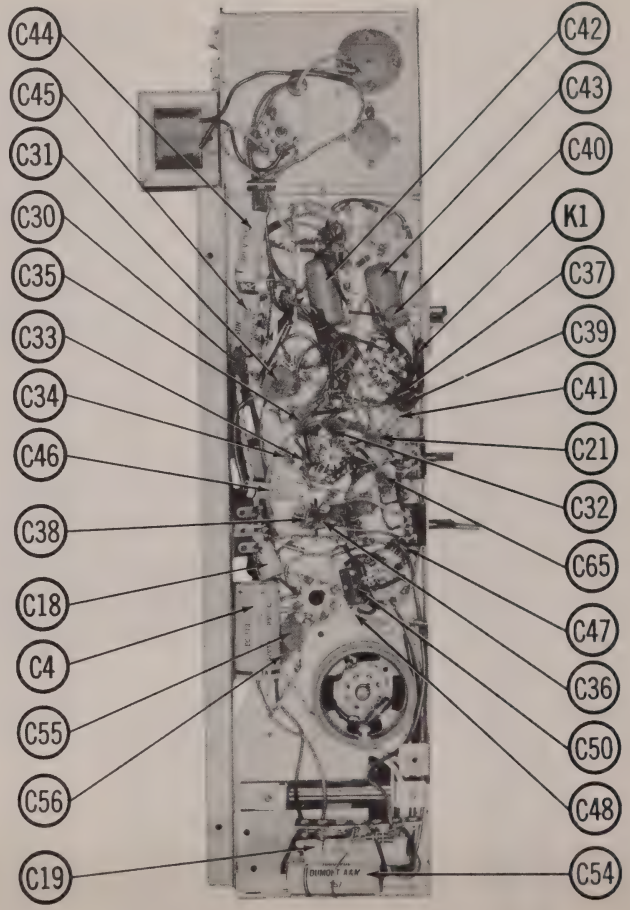


FIG. 202

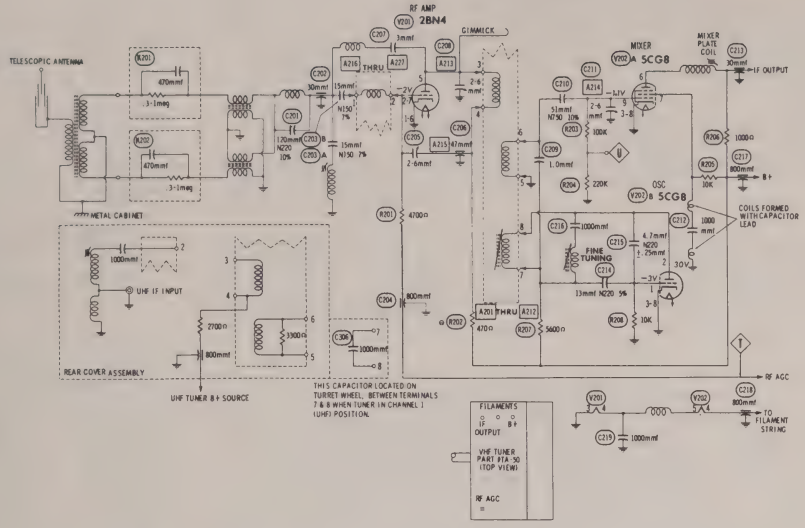


UPPER CHASSIS BOTTOM VIEW
CAPACITOR & ALIGN. IDENT.



LOWER CHASSIS BOTTOM VIEW
CAPACITOR & MISC. IDENT.

TUNER TA50



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
	• GENERAL ELECTRIC •		RAYTHEON •		SYLVANIA •
V201	RF Amplifier	2BN4	V202	Mixer - Osc.	5CG8

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C201	120 N220 10%					*		10TCR-T12
C202	30							
C203A	15 N150 7%					*		10TCP-Q15
B	15 N150 7%					*		10TCP-Q15
C204	800		EF-001	MFT-1000		CCF-102		
C205	2-6			829-6		VC-3	CT552	
C206	47		EF-000050	MFT-50				
C207	.3							
C208	2-6			829-6		VC-3	CT552	
C209	1		NPO-SI 1.0	TCZ-1			CNO-510	10TCC-V10
C210	51 N750 10%		N750-DI 47	TCN-51	C10Q51U	CCTN-470	CN7-447	10TCU-Q47
C211	2-6			829-6		VC-3	CT552	
C212	1000		BPD-001	DD-102	BYA10DI	CCD-102	GP210	10TS-D10
C213	30							
C214	13 N220 5%					*		
C215	4.7 N220 ±.25mmf					*		
C216	1000		BPD-001	DD-102	BYA10DI	CCD-102	GP210	10TS-D10
C217	800		EF-001	MFT-1000		CCF-102	CT280A	
C218	800		EF-001	MFT-1000		CCF-102	CT280A	
C219	1000		BPD-001	DD-102	BYA10DI	CCD-102	GP210	10TS-D10

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R201	4700Ω	Note 1
R202	470Ω	
R203	100K	

ITEM No.	RATING	REMARKS
R204	220K	
R205	10K	
R206	1000Ω	

ITEM No.	RATING	REMARKS
R207	5600Ω	
R208	10K	

Note 1. Some versions may use 1000Ω in this application.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	PART No.	REPLACEMENT DATA
K201	Antenna Isolation	470mmf, .3-1meg		Centralab RC-471 Sprague AC1-1
K202	Antenna Isolation	470mmf, .3-1meg		Centralab RC-471 Sprague AC1-1

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	GENERAL ELECTRIC	RAYTHEON	SYLVANIA		ITEM No.	GENERAL ELECTRIC	RAYTHEON	SYLVANIA	
	USE	TYPE	TYPE			USE	TYPE	TYPE	
V1	1st Video IF Amp.	2BZ6			V7	Audio Output		12C8/12CU5	
V2	2nd Video IF Amp.	3BZ6			V8	Sync Phase Inv. - Vert. Mult.		6CG7	
V3	3rd Video IF Amp	3CB6			V9	Vert. Mult. - Vert.Output		12GY5	
V4	Video Output - Sound IF Amp.	6AW6A			V10	Horiz. Mult.		6CG7	
V5	AGC Keyng - Sync Sep. - Noise Limiter	3DU8			V11	Horiz. Output		12DQ6A	
V6	Audio Detector	3DT8			V12	Damper		12AX4GTA	
					V13	HV Rectifier		1Z3GT	

PICTURE TUBE

ITEM No.	REPLACEMENT DATA				NOTES
	SONORA PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
V14	21DAP4	21DEP4 ①	21DAP4 ①	21DAP4	21DAP4/21DEP4/ 21DEP4A ②	① Aluminized ② Silver Screen "85"

ELECTROLYTIC CAPACITORS

ITEM No	RATING: CAP	RATING: VOLT	REPLACEMENT DATA: SONORA PART No.	ARROVOX PART No.	CORNELL DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1	140	300	EC-84	AFHR-37-3S	XA0396	FP3L	TME-1400	TVL-1540	
C2	140	300	EC-119	AFHR-37-3S	XA0395	FP3L	TME-1870	TVL-1594	
C3A	100	300	EC-120	AFHR4-100-30-X	D0044	FP4L4, 3	TME-4440	TVL-4701	
B	80	300			D0188				
C	100	50							
C4	40	300	EC-113	PHR880	BR6036	TC38	TD-40-350	TVA-1251	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA: ARROVOX PART No.	CENTRALAB PART No.	CORNELL DUBILIER PART No.	FUMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C5	10000		BPD-01	DD-103	BYA10B1	CCD-103	B-110	5HK-S10
C6	.02	100V	PMSH-1.0		CUB4F2	UDP-5-106	GEM-31	3TM-M1
C7	1000	10%	DD-1000	DD-102	FM6D1	CCD-102	GP3D	1DT5-D10
C8	680		DD-681	DD-681	BYA1DT2	CCD-681	B-382	1DT5-T10
C9	1.0	100V	PMSH-1.0		CUB2W5	UDP-5-105	GEM-31	3TM-M5
C10	330		DS-330	DD-331	BYA1DT2	CCD-331	B-332	1DT5-T32
C11	820		DS-820	DD-821	BYA1DT2	CCD-821	B-362	1DT5-T92
C12	2200		BPD-0022	DD-222	BYA1DD2	CCD-222	B-222	5HK-D22
C13	330		DS-330	DD-331	BYA1DT2	CCD-331	B-332	1DT5-T32
C14	560				SRST56	CM-(HB-56)J	MCJ347	M5-356
C15	5000		BPD-005	DD-502	BYA1DD5	CCD-502	B-380	5HK-D50
C16	5000		BPD-0005	DD-502	BYA10D5	CCD-502	B-380	5HK-D50
C17	.22	600V	PMSH-.22		CUB4F2	UDP-5-224	GEM-31	3TM-P21
C18	.033	600V	PMSH-.03	DD-303	CUB5D2	SDP-2-233	GEM-6122	6TM-S22
C19	.047	1000V	PMSH-.047		CUB3M4	SDP-5-473	GEM-10547	3TM-M47
C20	.1	600V	PMSH-.1	DP-104	CUB5P1	SDP-4-104	GEM-501	6TM-P1
C21	1000	2000V	BPD-30-1000	DD30-102	BYB3D1	SCD-103	SBT-300	B1-D50
C22	47	10%	HPO-SI 47	DS-470	LJ0Q47	CCD-470	GP4G7	1DT5-Q47
C23	4.7	10%	HPO-SI 4.7	DS-4R7	CU7V7C	CCD-4R7	CM0-S47	10TCC-V47
C24	1000	10%	DS-1000	DD-101	PM6D1	CCD-103	GP3D	1DT5-D10
C25	1000		BPD-01	DD-101	BYA10B	CCD-101	B-110	5HK-S10
C26	100	HPO 5%		DT5Z-100	C10TC	CM-(HB-10)J	CMO-S10	10TCC-T10
C27	4700		BPD-047	DD-472	BYA1DD4TM	CCD-473	B-347	5HK-D47
C28	1000	10%	DD-1000	DD-102	PM6D1	CCD-102	GP3D	1DT5-D10
C29	.02	1000 V	VH4C398-10%		V4DP-3-603	CDM-6315	GEM-6315	3TM-S60
C30	10000		BPD-01	DD-103	BYA10B	CCD-103	B-110	5HK-S10
C31	10000	1400V	DAC-37	DS18-103	BYB1W8	SDP-3-103	UAC-310	B1-S10
C32	10000		BPD-01	DD-103	BYA10B	CCD-103	B-110	5HK-S10
C33	10000		BPD-01	DD-103	BYA10B	CCD-103	B-110	5HK-S10
C34	150		DK-150	DS-151	LJ0Y15	CCD-151	B-315	5HK-T15
C35	4700		BPD-0047	DD-472	BYA10D4TM	CCD-472	B-347	5HK-D47
C36	1000	10%	DK-1000	DD-102	PM6D1	CCD-102	GP3D	1DT5-D10
C37	470		BPD-00047	DD-471	BYA10T47	CCD-471	B-347	1DT5-T47
C38	1000	10%	DK-1000	DD-102	PM6D1	CCD-102	GP3D	1DT5-D10
C39	2200		BPD-0022	DD-222	BYA10D2	CCD-222	B-322	5HK-D22
C40	1000	2000V	BPD-30-1000	DD30-102	BYB3D1	SCD-103	SBT-300	B1-D50
C41	.047	600V 10%	VH4C6547-10%		PM6S47	SDP-3-473	GEM-3615	6TM-M47
C42	.1	600V 10%	VH4C591-10%		PM6P1	SDP-4-104	GEM-1001	6TM-P1
C43	.1	600V 10%	VH4C591-10%		PM6P1	SDP-4-104	GEM-1001	6TM-P1
C44	.047	600V	PM6S-047	DD-503	CUB6S47	SDP-3-473	GEM-6147	6TM-S47
C45	.047	600V	PM6S-047	DD-503	CUB6S47	SDP-3-473	GEM-6147	6TM-S47
C46	.01	600V	PM6S-01	DS-103	CUB6S1	SDP-3-103	GEM-6131	6TM-S1
C47	4700		BPD-047	DD-472	BYA10D4TM	CCD-473	B-347	5HK-D47
C48	.05	300V 10%	VH4C39-10%		PM6S5	SDP-3-503	GEM-6315	3TM-S50
C49	3900	10%	1484-0039		1S5G39	CM-(HB-392)K	MCJ462.5	M5-392
C50	680	10%	1469-00068		SRST68	CM-(HB-68)K	MCJ349	M5-368
C51	680	10%	1469-00068		SRST68	CM-(HB-68)K	MCJ349	M5-368
C52	4700		BPD-047	DD-472	BYA10D4TM	CCD-473	B-347	5HK-D47
C53	.047	600V	PM6S-047	DD-503	CUB6S47	SDP-3-473	GEM-6147	6TM-S47
C54	.047	1600V 10%						
C55	330	3000V H5500 10%	Pt. #CC-119					
C56	330	3000V H5500 10%	Pt. #CC-119					
C57	150	3000V 5%				VCM-20-151J		
C58	1000		BPD-001	DD-102	BYA10T2	CCD-102	B-310	5HK-D10
C59	1000		BPD-001	DD-102	BYA10D2	CCD-102	B-310	5HK-D10
C60	1500		BPD-0015	DD-152	BYA10D15	CCD-152	B-315	5HK-D15
C61	1500		BPD-0015	DD-152	BYA10D15	CCD-152	B-315	5HK-D15
C62	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-380	5HK-D50
C63	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-380	5HK-D50
C64	.01	1600V	PM6S-01	DD6-103	HVS16S	16DP-3-103	GEM-1611	M5-S1
C65	820		DS-820	DD-821	BYA10T2	CCD-821	B-362	1DT5-T92

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SONORA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS—IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1000Ω		R2425	#1-S				Contrast Note 1
B	500K			#2-S	RTV-711	†GI-3295	#	Volume Note 1
C	Switch			KN-1				Power Off-On
R3A	250K	½	VC-91	B-502	A4T-250K-S	QH-130	U48	Vert. Hold
B	Shaft			Not Req.	X2H-3	Not Req.	Not Req.	
R3A	2.5meg	½	VC-78	T7-53	B4T-2.5meg-S	ELC3	RU-585	Vert. Size (Height)
B	Shaft			Not Req.	Not Req.	Not Req.	Not Req.	
R4A	1500Ω	½	VC-35A	T7-51	B4T-1500-S	HG-159	PTA1531	Vert. Linearity
B	Shaft			Not Req.	Not Req.	TM4	Not Req.	
R5A	100K	½	VC-94	T7-40	B4T-100K-S	HG-128	PTA181	AGC
B	Shaft			Not Req.	Not Req.	TM4	Not Req.	
R6A	100K	½	VC-84	T7-40	B4T-100K-S	HG-128	PTA181	Brightness
B	Shaft			Not Req.	Not Req.	TM4	Not Req.	

Note 1. Some versions may use 1000Ω contrast, 1meg volume w/switch (Part #VC-25).
† "Concentrikit" Equivalent: K-6 Kit with Base Elements & Shafts: B1T-108, P1T-118 (Panel)
R1-133, R1-302 (Rear)
76-1 (Switch)
"STA-LOC" Equivalent: FD13B, RU551, OR5624A, IB12S, U54J.

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R7	10meg	
R8	3meg	
R9	2.3meg	
R10	560K	
R11	220K	
R12	120K	
R13	4700Ω	
R14	270K	
R15	22K	
R16	39K	
R17	470Ω	
R18	470Ω	
R19	22K	
R20	470Ω	
R25	470Ω	
R23	68Ω	
R33	18K	
R24	470Ω	
R25	150Ω	
R26	8200Ω	
R27	47K	
R28	100Ω	
R29	7500Ω 5W	IRC #PW5-7500Ω
R30	39K	
R31	47K	
R32	1200Ω	
R33	18Ω	
R34	180Ω	
R35	18K	
R36	82K	
R37	150K	
R38	470K	
R39	68K	
R40	200Ω 1W	
R41	39K	
R42	39K	
R43	4.7meg	
R44	270K	
R45	68K	
R46	100K	
R47	100K	
R48	330Ω	
R49	200K	
R50	100K	
R51	560K	
R52	82000	
R53	680Ω	
R54	18K	
R55	1meg	
R56	100Ω	
R57	220Ω 2W	
R58	2.2meg	
R59	3.7meg	
R60	68000	
R61	68000	
R62	2200Ω	
R63	330Ω	
R64	220K	
R65	820K	
R66	56K	
R67	2.2meg	
R68	33K	
R69	5.6Ω	
R70	330Ω 1W	
R71	39K 1W	
R72	220Ω	
R73	220Ω	
R74	39K	
R75	100K	
R76	100K	
R77	4.7meg	
R78	470K	
R79	22K 3W	IRC #PW3-22K
R80	100Ω	
R81	1500Ω	
R82	100K	
R83	56K	
R84	15K	
R85	100Ω	
R86	470K	
R87	12K 3W	IRC #PW3-12K
R88	4700Ω	
R89	39K	
R90	5.6Ω	Pt. #F-6-1 IRC #FS-5.6Ω
R91	110Ω (Cold)	Pt. #F-8
R92	270Ω 10W	IRC #PW10-270Ω
R93	5Ω 5W	IRC #PW5-5Ω
R94	470K	
R95	5.6Ω (Cold)	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	SONORA PART No.	REPLACEMENT DATA
X1	Vert. Integrator	4700mmf, 10000mmf, 15K, 15K	CC-120	Centralab PC-392

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: SONORA PART No.	Merit PART No.	Miller PART No.	Rem PART No.	NOTES
L1	1st Video IF	L-150				
L2A	2nd Video IF	L-155	TV-137	6232		
B	4.25MC Trap					
L3A	3rd Video IF	L-165	TV-138	6233		
B	4.7.25MC Trap					
L4	4th Video IF	L-152				
L5	RF Choke	L-169	BC-666	4613		10uh
L6	RF Choke	L-158		4615		27uh
L7A	4.5MC Trap	L-154				
B	1st Sound IF					
L8	Series Peaking Coil	L-182 ①				
L9	Shunt Peaking Coil	L-183 ②				
L10	2nd Sound IF	L-187				
L11	Quadrature Coil	L-185A	TV-154 ▲	146t ▲	SD-5 ▲	

① Wound on 47000 Resistor. ② Wound on 10K Resistor. ▲ Parallel with 100K Resistor.

COILS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: SONORA PART No.	Merit PART No.	Miller PART No.	Rogers PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L12	Horiz. Stabilizer	L-156	RS-5 ①	6210 ①	H-102 ①	RC-130 ①	RS-5 ①	WLC-15①

① Enlarge mounting hole.

FILTER CHOKE

ITEM No.	RATINGS: CURRENT	RATINGS: DC RES.	RATINGS: INDUCTANCE @ CURRENT 1000 ~(a)	SONORA PART No.	REPLACEMENT DATA: Merit PART No.	Rem PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L13	.250A	200	55 Hy.	FC-8A			C-2343		C-34X

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: SONORA PART No.	Merit PART No.	Rem PART No.	Rogers PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	Vert. Output	TR-50B		V319			26H4	A-140X
T2	Ant., Vert. Output, Yoke Horiz. 110° Horiz. Rear Cover and Centering Device	TR-52B / L-149C / 946554	Y-110 ①			DY-27A ②	Y-52 ③	Y-60-A ③
T3	Horiz. Output	TR-51A	HVO-152 *	X-152 *	EFH172 *③	HO-304 *	FLY-137 *	D-151X *

① Mount with leads out bottom. Use original yoke plug and connect yoke terminal #2 to plug #3; yoke terminals #4 and #3 to plug #4; yoke terminal #10 to plug #6; yoke terminal #6 to plug #7; yoke terminal #4 to plug #8.
② Use original yoke plug and connect same as original.
③ Remove one turn from filament winding.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

ORIGINAL TERMINAL CONNECTIONS	Merit Replacement Connections	Rem Replacement Connections	Rogers Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
5	5	5	5	5	5	5 & 4
6	6	6	4	6	6	6
7	7	7	3	7	7	7
8	8	8	1	8	8	8
2	2	2	7	2	1	2
1	1	1	8	1	2	1

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	IMPEDANCE: SEC.	REPLACEMENT DATA: SONORA PART No.	Merit PART No.	Rem PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T4	2600Ω	3-4Ω	AT-53	A-3025	AU-805	A-3333	34H83	S-13X	

SPEAKER

ITEM No.	TYPE: SIZE	TYPE: FIELD	TYPE: V. C. IMP.	REPLACEMENT DATA: SONORA PART No.	QUAM PART No.	NOTES
SP1	4"	PM	3-4Ω	SPK-49	4A07	Used in Model 280T21L.
	6" x 9"	PM	3-4Ω	SPK-45	6A3	Used in Models 280C22, 280LB24.

RECTIFIERS

ITEM No.	RATING: CURRENT (Measured)	REPLACEMENT DATA: SONORA PART No.	ITT PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.150A	SR-14	RE504	1N1764	F6	SR500	Silicon Type
M3	.350A	SR-14	RE504	1N1764	F6	SR500	Silicon Type
MJ		SR-15	K2616				Dual Selenium Diode

MISCELLANEOUS

ITEM No.	PART NAME	SONORA PART No.	NOTES
M4	Tuner	TA-30	VHF

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

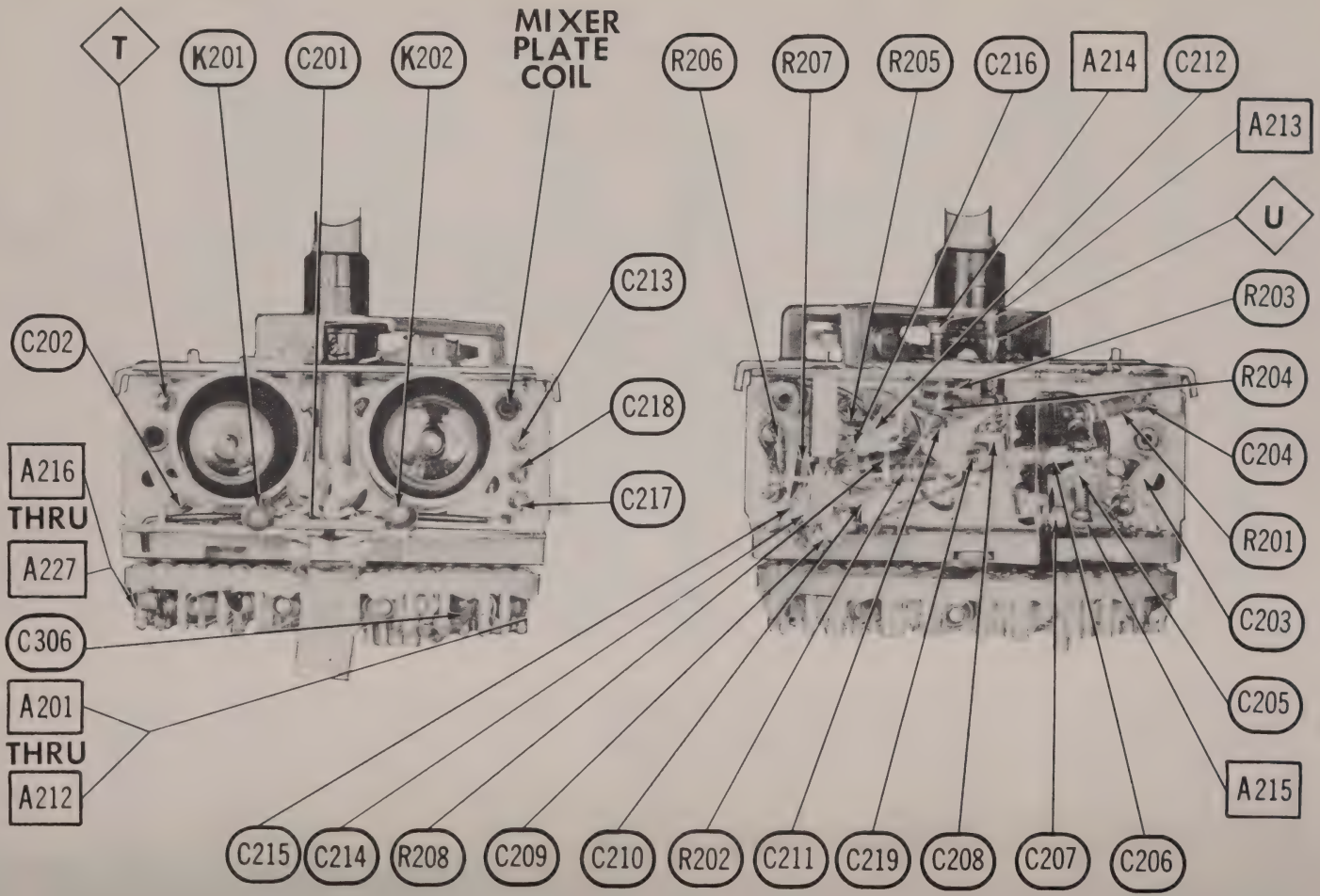
NAME	PART NO.	DESCRIPTION
Mask	MP-168	Type R-3050
Knob	K-300	Channel Selector, Type R-3081-A Tan, or Type R-3081-3 Mahogany, Models 280T21L, 280K22
Knob	K-305	Channel Selector, Type R-3090 Tan, or Type R-3090-1 Mahogany, Model 280LB24
Knob	K-294	Fine Tuning, Type R-3082-A Tan, or R-3082-3 Mahogany, Models 280T21L,
Knob	K-296	Fine Tuning, Type R-3092 or Type R-3108, Model 280LB24 280K22
Knob	K-301	Volume, Type E2-0102 Tan, or Type E2-0102-1 Mahogany, Models 280T21L, 280K22
Knob	K-297	Volume, Type R-3121 Tan, or Type R-3121-1 Mahogany, Model 280LB24
Knob	K-292	Contrast, Type E2-0103 Tan, or Type E2-0103-1 Mahogany, Models 280T21L, 280K22
Knob	K-298	Contrast, Type R-3120 Tan, or Type R-3120-1 Mahogany, Model 280LB24
Cabinet	CA-382	Model 280T21L
Cabinet	CA-383	Model 280K22
Cabinet	CA-384	Model 280LB24

WIRING DATA

High Voltage Lead	Use BELDEN No. 8869
Shielded Hook-up Wire	Use BELDEN No. 8885 (Single Conductor) 8735 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors
	8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8874
300Ω Tuner Input Lead	Use BELDEN No. 8225
300Ω Antenna Lead-in	Use BELDEN No. 8230 or 8275
Antenna Rotor Cable	Use BELDEN No. 8464 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8486 (Round) - 8 Conductor

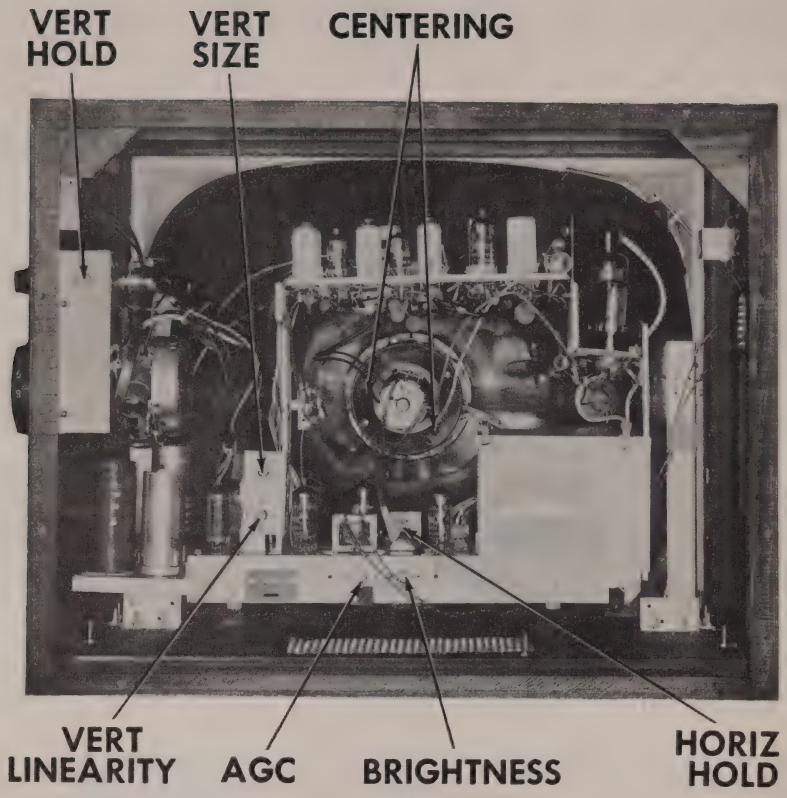
SONORA MODELS 560K212, 560LB214, 560T21I (Ch. 115D-100)

FOLDER 2


T
K201
C201
K202
MIXER PLATE COIL
R206
R207
R205
C216
A214
C212
A213
U
R203
R204
C204
R201
C203
C205
A215
C206
C207
C208
C219
R211
R202
C210
C209
R208
C214
C215
A212
THRU
A201
C306
A227
THRU
A216
C217
C218
C213
C202

LOWER CHASSIS BOTTOM VIEW
RESISTOR IDENT.

UPPER CHASSIS BOTTOM VIEW
RESISTOR & INDUCTOR IDENT.



CABINET—REAR VIEW

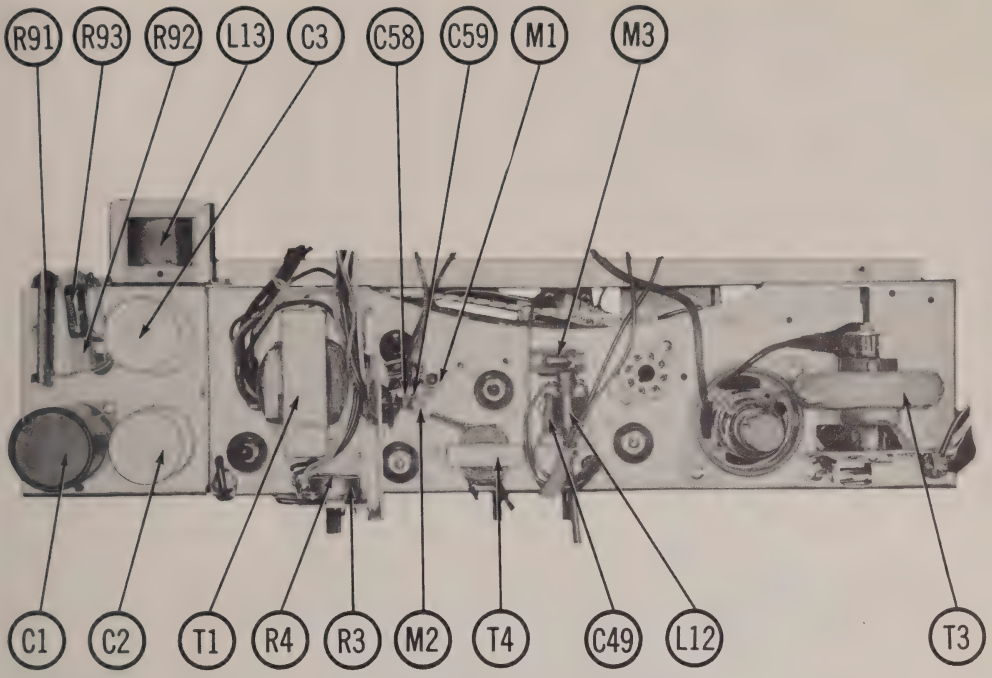
HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably with a test pattern.

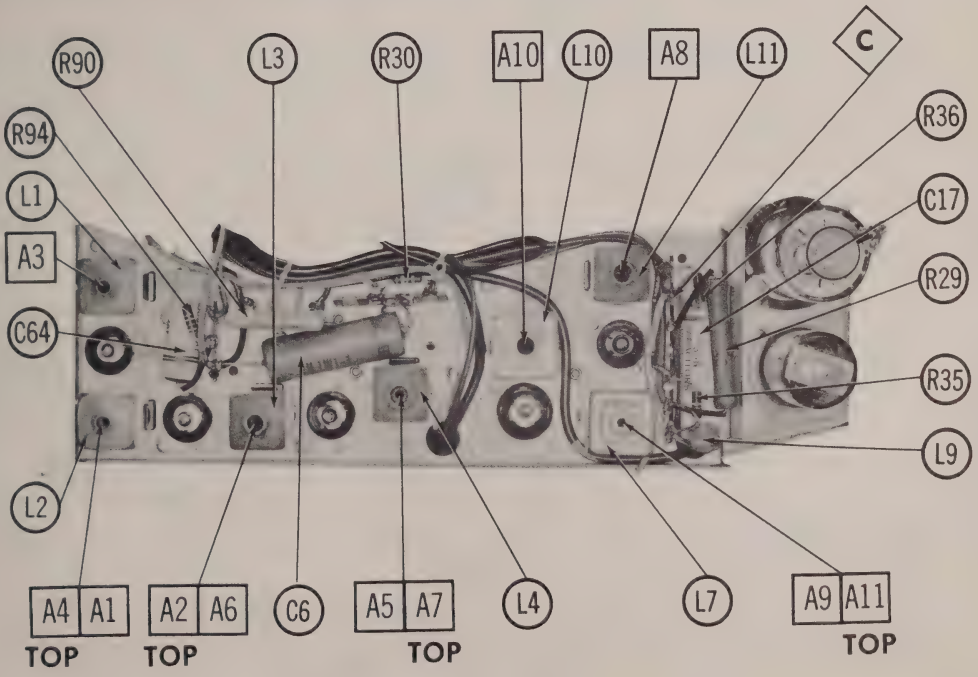
Set the Brightness and Contrast controls for a normal picture.

Turn the Horizontal Hold clockwise until the picture loses sync. It may be necessary to switch off channel and back again for picture to lose sync.

Turn the Horizontal Hold slowly counterclockwise until the picture just falls into sync.

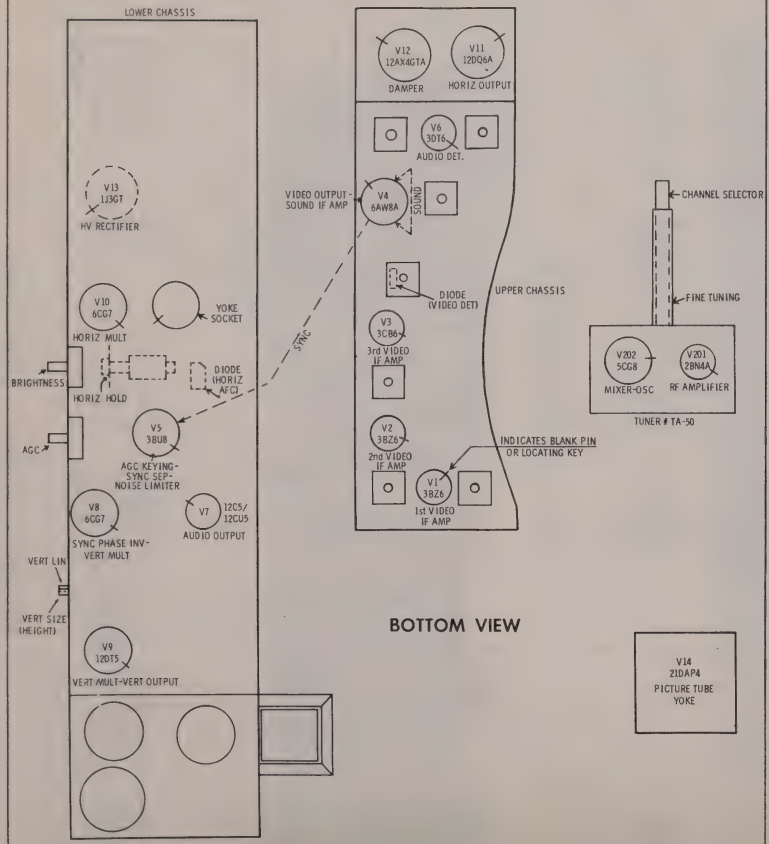


LOWER CHASSIS - TOP VIEW



UPPER CHASSIS - TOP VIEW

TUBE PLACEMENT CHART



RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	3BZ6	150K	47Ω	29Ω	26Ω	▲470Ω	▲470Ω	0Ω		
V2	3BZ6	220K	240K	26Ω	24Ω	†520Ω	†520Ω	240K		
V3	3CB6	0Ω	150Ω	24Ω	22Ω	■470Ω	■470Ω	0Ω		
V4	6AW8A	0Ω	100K	■100K	17Ω	22Ω	● 40Ω	6900Ω	■1200Ω	‡7500Ω
V5	3BU8	■0Ω	†8200Ω	2.3meg	62Ω	60Ω	● 32K	†390K	†47K	■ 4.7meg
V6	3DT6	18Ω	680Ω	17Ω	15Ω	†300K	■8200Ω	560K		
V7	12C5/12CU5	¶	1meg	60Ω	45Ω	NC	†270Ω	†480Ω		
V8	6CG7	●†1.6meg	220K	● 110K	40Ω	45Ω	†12K	1.8meg	3300Ω	0Ω
V9	12DT5	†150Ω	NC	NC	40Ω	29Ω	2.2meg	●700Ω	NC	†425Ω
V10	6CG7	†10K	2.5meg	1500Ω	62Ω	67Ω	†100K	56K	1500Ω	0Ω
V11	12DQ6A	NC	67Ω	NC	†12K	470K	TP	80Ω	0Ω	TOP CAP †10Ω
V12	12AX4GTA	NC	NC	¶	NC	†50Ω	NC	95Ω	80Ω	
V13	1J3GT		PINS	1 THRU 8	HAVE	INFINITE	RESISTANCE			TOP CAP †470Ω
V14	21DAP4	15Ω	39K	†150K	†50Ω	NC	NC	● 95K	10Ω	
V201	2BN4	0Ω	4meg	0Ω	4Ω	■1300Ω	0Ω	NC		
V202	5CG8	10K	■6000Ω	0Ω	4Ω	10Ω	■1300Ω	■10K	0Ω	320K
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
● THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
‡ MEASURED FROM PIN 3 OF V12.
† MEASURED FROM OUTPUT OF M1.
NC NO CONNECTION
■ MEASURED FROM PIN 1 OF V7.
▲ MEASURED FROM PIN 7 OF V2.
TP TIE POINT

PHOTOFACT® Folder

**PRODUCTION CHANGE
BULLETIN 245**

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 1 IN SET 449

Andrea Models LB-VR121, LB-VR121(50), T-VR121, T-VR121(50) (Ch. VR-121-1, VR-121-1(50), VR-121, VR-121(50), VR-321, VR-321(50) were covered in PHOTOFACT Folder 1 - Set 449.

Models 1C-VRT-123-1, 2C-VRT-123-1 and 3C-VRT-123-1 (Ch. VRT-123-1) are electrically identical to the models covered except for the following changes and are added with the publication of this bulletin.

COMPONENT CHANGES

V16 (Picture Tube) is changed to 23HP4.

V10 (Vert. Mult. - Vert. Output) is changed to 6EM5.

R1A, B (Volume, Push On-Off Switch) is changed to Part #GRV-869-1.

R2 (Contrast) is decreased from 750Ω to 500Ω, Part #GRV-870-1.

R5A (Brightness) is increased from 50K to 150K, Part #GRV-887.

R8 (Horiz. Drive) is decreased from 100K to 10K, Part #GRV-876.

R28 is decreased from 33K 1W to 18K 2W.

R29 is increased from 820Ω to 2200Ω.

R31 is increased from 4700Ω to 10K 2W 5%.

A 10K 2W 5% Resistor is added in parallel with R31.

R33 is omitted.

A 150K 1W Resistor is added between Pin 4 of V16 and the 250 voltage source.

A 22K ½W Resistor is added between Pin 8 of V5A and the 250 voltage source.

R48 is decreased from 150K to 47K.

R35 is omitted.

R51 is omitted.

A 47K ½W Resistor is added between C36 and Terminal 3 of K1.

An 18K ½W Resistor is added from Terminal 2 of K1 to ground.

R61 is decreased from 560K to 270K.

R72 and R73 are omitted.

C49 is omitted.

C28 is increased from 470mmf to 10,000mmf.

A 10K ½W Resistor is added between Terminal 2 of L12 and Pin 1 of V7A.

A 12.6uh Resonant Choke is added between Pin 2 Of V7A and the minus side of C3 (Part #SA-420).

R36 is decreased from 47K to 22K.

R76 is increased from 68K to 330K.

A 1meg ½W Resistor is added from the junction of R74, C52, R75 to ground.

R84 and R85 are omitted.

ANDREA MODELS 1C-VRT-123-1, 2C-VRT-123-1, 3C-VRT-123-1 (CH. VRT-123-1)

(Continued On The Reverse Side)

PRODUCTION CHANGE
BULLETIN 245

PRODUCTION CHANGE
BULLETIN 245

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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A 27K $\frac{1}{2}$W Resistor is added between R8 and the 250 voltage source.

C60 is omitted.

A 10000mmf Ceramic Capacitor is added between Terminal D of L13 and the Center Arm of R8.

C66 is decreased from 300mmf to 200mmf.

C68 is decreased from 300mmf to 200mmf.

R91 is decreased from 1meg to 390K.

A 2uh RF Choke is added in the 6.3VAC Filament line, Part #SA-416.

A 10,000mmf Ceramic Capacitor is added from source Y on the 6.3VAC Filament line to ground.

L2A, B (1st Video IF-41.25MC Trap) is changed to Part #SA-377C.

L4 (3rd Video IF) is changed to Part #SA-378.

L11 (1st Sound IF) is changed to Part #SA-427.

L12 (Ratio Detector) is changed to Part #SA-426-1.

SPEAKERS CHANGED

All Models and Chassis being added in this bulletin use the following 3 speakers:

One $3\frac{1}{2}$" PM - Part #SL-4033

One 6" PM - Part #SL-4050

One 6" PM - Part #SL-4051

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 2 IN SET 478

HOFFMAN MODELS M3703, SP3703, W3703 (CH. 426, 1139)

Hoffman Models M3703, SP3703, W3703 (Ch. 426, 1139) were covered in PHOTOFACT Folder 2 - Set 478.

The following changes were made during late production.

COMPONENTS ADDED

A .01mfd Capacitor is added from Lug 3 of K1 to ground.

A 1500Ω 2 watt Resistor is added from the green lead of the Secondary Winding of T2 (Vertical Output Transformer) to ground.

A 4mfd @ 600 volt (Boost Filter) Electrolytic Capacitor is added from the Boost Source to ground (Part #856022).

A. Horizontal Size Switch (Part #902038) is added.

A .047mfd Capacitor is added between Lugs 4 and 7 of the Horizontal Size Switch.

A .1mfd Capacitor is added between Lugs 1 and 4 of the Horizontal Size Switch.

The Lead coming from Pins 1 and 2 of V10 (6AL5) is relocated to Lug 4 of the Horizontal Size Switch.

COMPONENT CHANGES

C68 is increased from .068mfd to .22mfd and is relocated to Lug 5 of the Horizontal Size Switch.

R70 is decreased from 4.7meg to 220K.

R74 is increased from 100K to 120K.

R76 is decreased from 10K to 4700Ω.

R78 is relocated from the Junction of C63, R7 to ground.

R81 is increased from 22K to 100K.

COMPONENTS DELETED

C63 is omitted.

C66 is omitted.

VERTICAL CIRCUIT CHANGE

The Vertical Multivibrator Circuit was changed during late production. A partial schematic diagram showing the changes is given in this bulletin.

(Continued On The Reverse Side)

****** CORRECTION NOTICE *****

RCA VICTOR MODELS KS23, PD23, PD24, PM23D (CH. RS-178, X)

RCA Victor Models KS23, PD23, PD24, PM23D (Ch. RS-178, X) were covered in PHOTOFACT Folder 22 - Set 486.

The following are corrections that should be made to this folder.

WIRING CHANGE

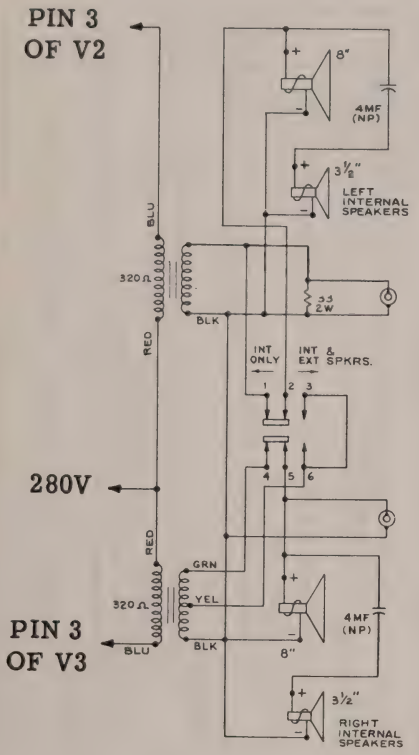
The black and green coding of the Output Transformer (T2) secondary is reversed.

The black and violet coding of the Output Transformer (T3) secondary is reversed. In early versions the white lead was yellow and the violet lead was green.

CIRCUIT CHANGE

Model PM-23D uses a different speaker hook-up. A partial schematic diagram showing these changes is given in this bulletin.

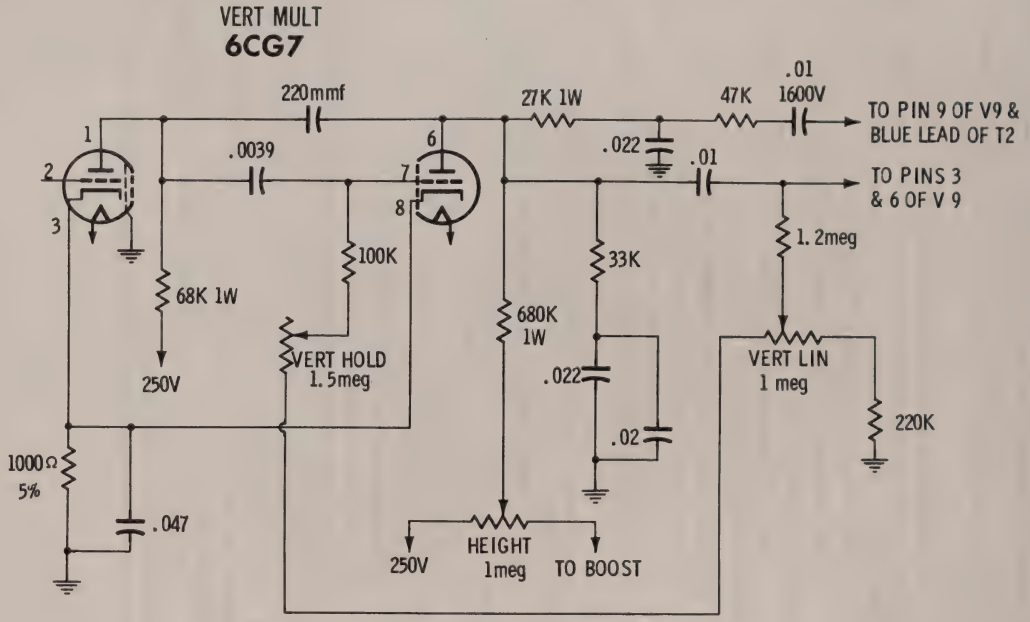
(Continued On The Reverse Side)



Partial Schematic Diagram

Courtesy of Radio Corporation

of America



PHOTOFACT® Folder with CIRCUITRACE®

ADMIRAL MODEL 909 (Ch. 9G1)

ADMIRAL MODEL
909 (Ch. 9G1)

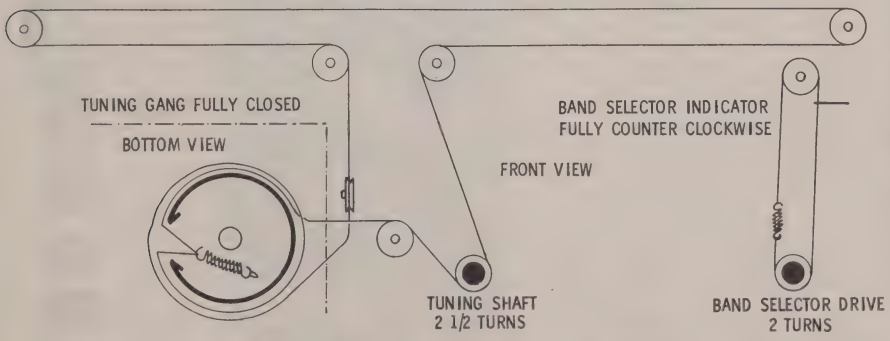
ADMIRAL MODEL
909 (Ch. 9G1)

TRADE NAME	Admiral Model 909 (Ch. 9G1)		
MANUFACTURER	Admiral Corp., 3800 W. Cortland Street, Chicago 47, Illinois		
TYPE SET	Battery Operated 9-Band Transistorized Portable Receiver		
POWER SUPPLY	12 Volts DC (Radio) 1.5 Volts DC (Dial Light)	RATING	12MA @ 12 Volts DC (No Signal, Min. Volume) 20MA @ 12 Volts DC (Signal, Normal Volume)

TUNING RANGES

Band 1	150-400KC (Long Wave)	Band 4	4-9MC (Short Wave)	Band 7	14.6-16MC (19 Meter)
Band 2	535-1620KC (Standard)	Band 5	9.4-10.1MC (31 Meter)	Band 8	17.1-18.8MC (16 Meter)
Band 3	2-4 MC (Amateur)	Band 6	11.4-12.4MC (25 Meter)	Band 9	20.6-23MC (13 Meter)

DIAL CORD STRINGING



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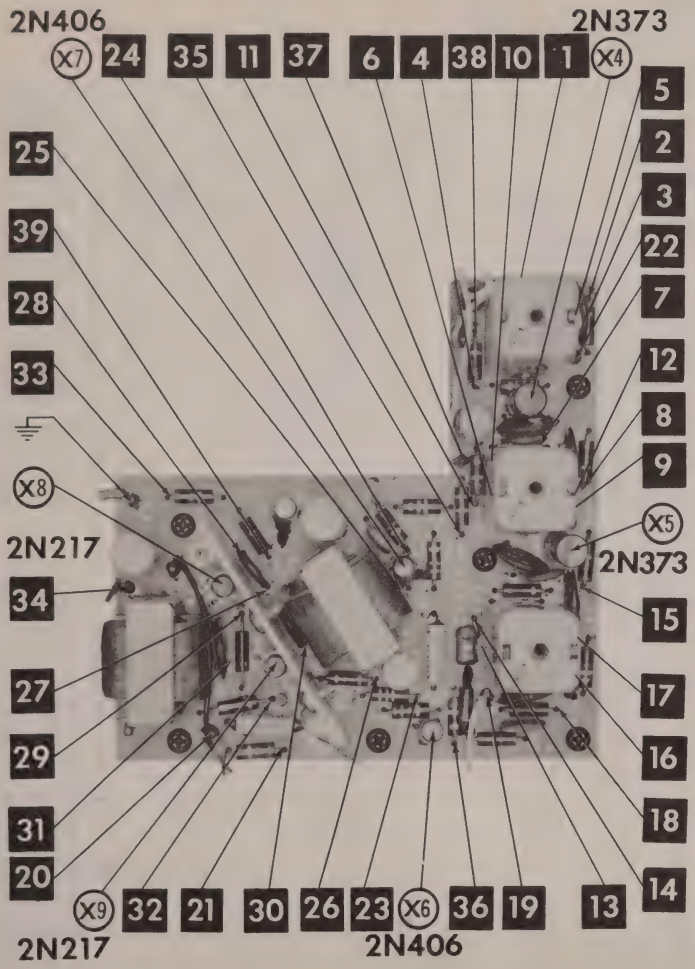
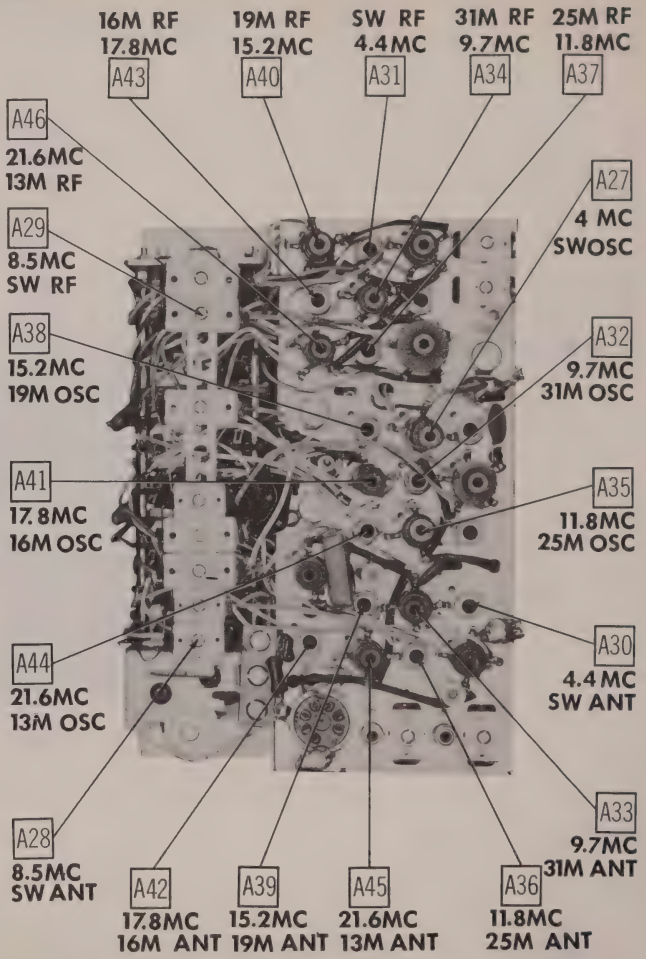
JF957

SET 502 FOLDER 4

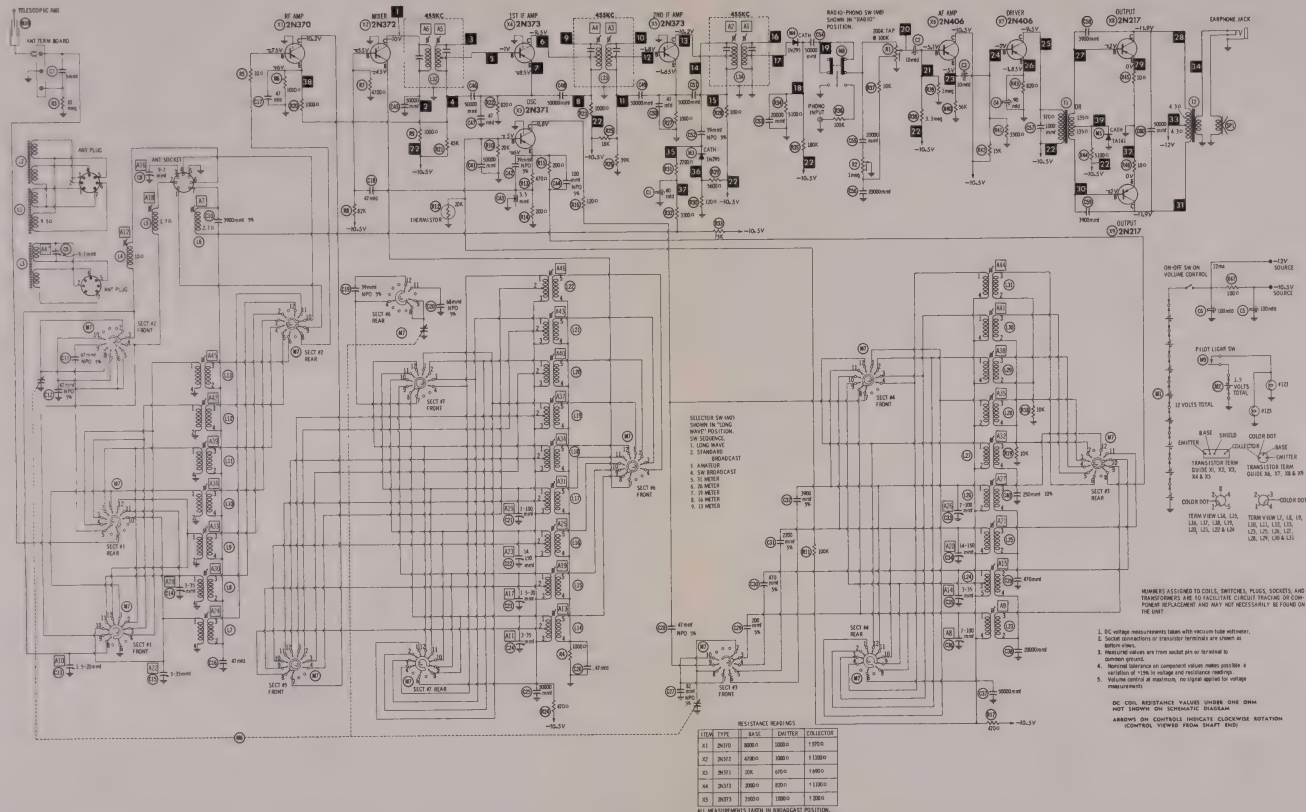


A Howard W. Sams CIRCUITRACE® Photo

PRINTED BOARD



RF-OSC. CHASSIS – ALIGNMENT IDENT. (A27-A46)


TELESCOPIC ANT
ANT TERM BOARD
ANT PLUG
ANT SOCKET
RF AMP
X1 2N370
MIXER
X2 2N372
455KC
1ST IF AMP
X3 2N373
OSC
X4 2N371
2ND IF AMP
X5 2N373
THERMISTOR
RADIO-PHONO SW (MID SHOWN IN "RADIO" POSITION.
PHONO INPUT
AF AMP
X6 2N406
DRIVER
X7 2N406
OUTPUT
X8 2N217
OUTPUT
X9 2N217
EARPHONE JACK
SECT #2 FRONT
SECT #2 REAR
SECT #1 REAR
SECT #1 FRONT
SECT #7 FRONT
SECT #6 REAR
SECT #7 REAR
SECT #6 FRONT
SECT #4 FRONT
SECT #3 REAR
SECT #4 REAR
SECT #5 FRONT
SELECTOR SW (MID) SHOWN IN "LONG WAVE" POSITION. SW SEQUENCE: 1. LONG WAVE 2. STANDARD BROADCAST 3. AMATEUR 4. SW BROADCAST 5. 31 METER 6. 26 METER 7. 19 METER 8. 16 METER 9. 13 METER
ON-OFF SW ON VOLUME CONTROL
+12V SOURCE
-10.5V SOURCE
PILOT LIGHT SW
12 VOLTS TOTAL
#120
BASE
SHIELD
COLOR DOT
EMITTER
COLLECTOR
TRANSISTOR TERM DIODE X6, X7, X8 & X9
TRANSISTOR TERM DIODE X6, X7, X8 & X9
TERM VIEW L14, L15, L16, L17, L18, L19, L20, L21, L22 & L24
TERM VIEW L7, L8, L9, L10, L11, L12, L13, L23, L25, L26, L27, L28, L29, L30 & L31
RESISTANCE READINGS
ITEM
TYPE
BASE
EMITTER
COLLECTOR
X1 2N370 8000 Ω 1000 Ω 1 370 Ω
X2 2N372 4700 Ω 1000 Ω 1 1000 Ω
X3 2N371 20K 470 Ω 1 950 Ω
X4 2N373 2000 Ω 820 Ω 1 1100 Ω
X5 2N373 1900 Ω 1800 Ω 1 2200 Ω
ALL MEASUREMENTS TAKEN IN BROADCAST POSITION. TRANSISTORS REMOVED FOR RESISTANCE MEASUREMENTS. RESISTANCE MEASUREMENTS FOR X6, X7, X8 AND X9 NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.
1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections or transistor terminals are shown as bottom views.
3. Measured values are from socket pin or terminal to common ground.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM.
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC with Centuflex

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ADMIRAL MODEL 909 (Ch. 901)

ALIGNMENT INSTRUCTIONS

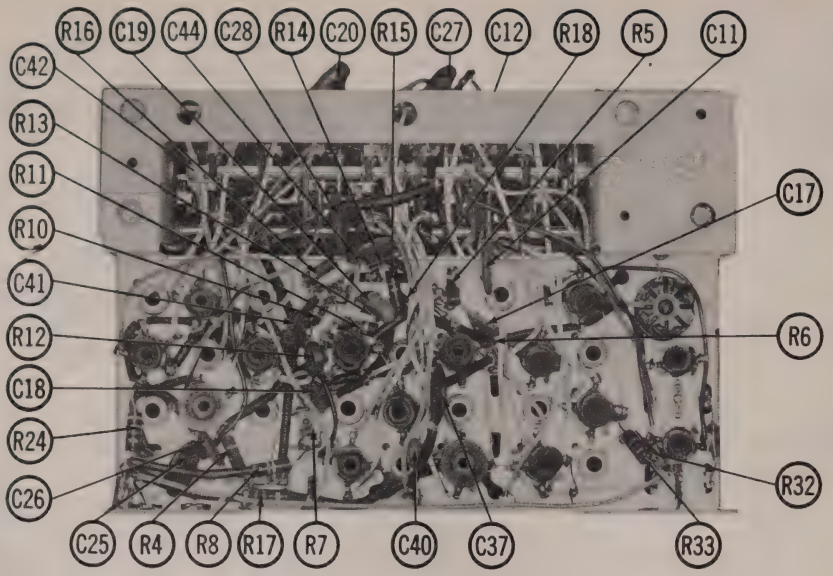
ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial.

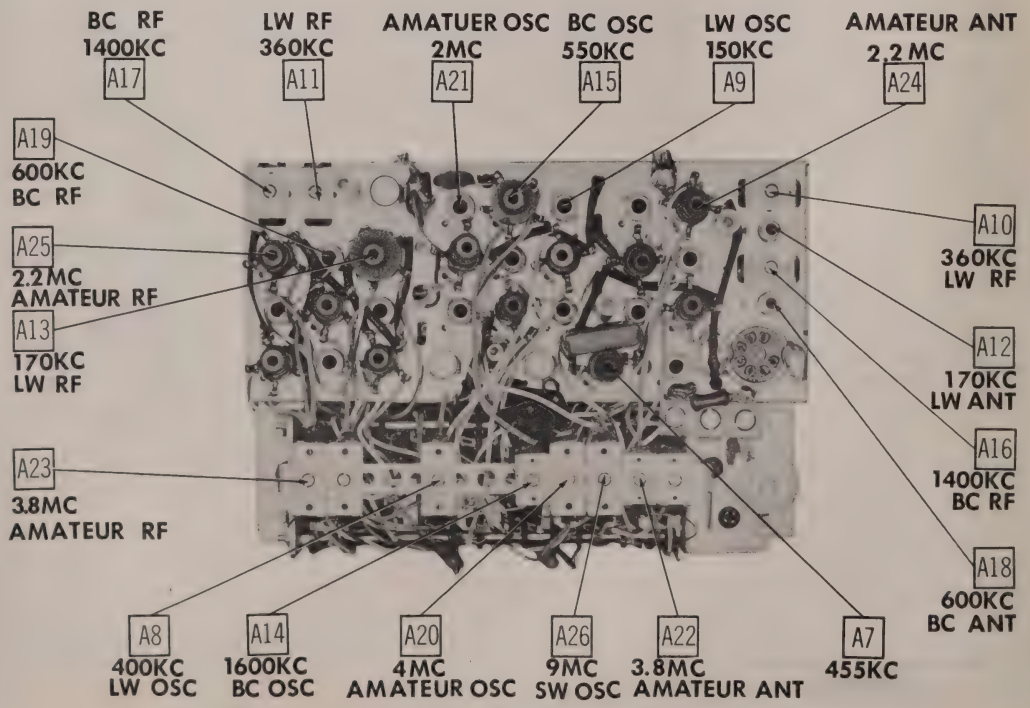
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools: All coil adjustments.....GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545
All trimmer adjustments.....GENERAL CEMENT #5000, 5003, 5066, 8276, 8290, 9087, 9089
WALSCO #2512, 2525, 2528

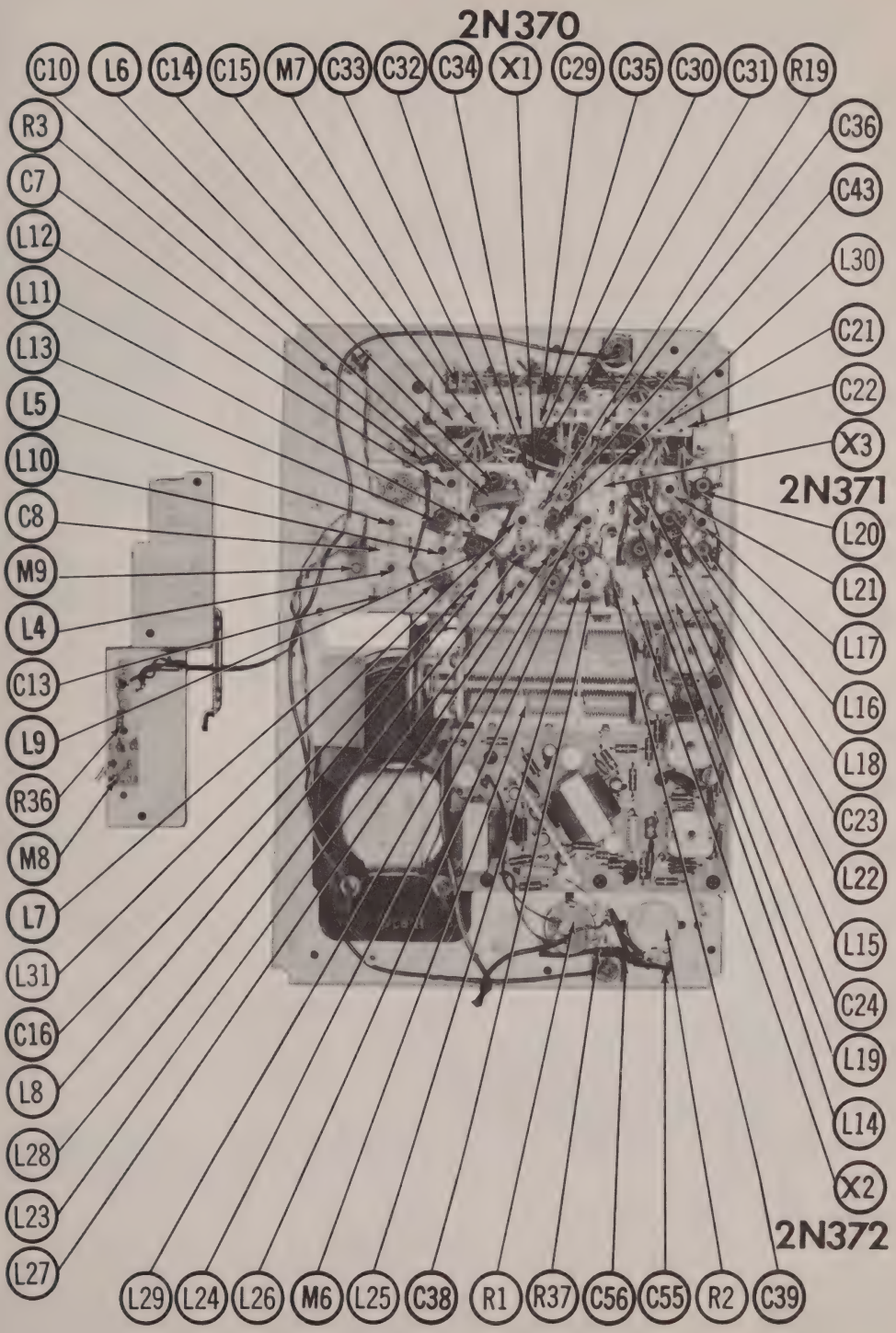
	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	Loop	455KC (400~ Mod.)	(Band 2) Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4, A5, A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2.	"	"	(Band 1) 360KC	"	A7	Adjust for MINIMUM output.
3.	"	400KC	(Band 1) 400KC	"	A8	Adjust for maximum output.
4.	"	150KC	(Band 1) 150KC	"	A9	Adjust for maximum output. Repeat Steps 3 and 4.
5.	"	360KC	(Band 1) 360KC	"	A10, A11	Adjust for maximum output.
6.	"	170KC	(Band 1) 170KC	"	A12, A13	Adjust for maximum output. Repeat Steps 5 and 6.
7.	"	1600KC	(Band 2) 1600KC	"	A14	Adjust for maximum output.
8.	"	550KC	(Band 2) 550KC	"	A15	Adjust for maximum output. Repeat Steps 7 and 8.
9.	"	1400KC	(Band 2) 1400KC	"	A16, A17	Adjust for maximum output.
10.	"	600KC	(Band 2) 600KC	"	A18, A19	Adjust for maximum output. Repeat Steps 9 and 10.
11.	Thru dummy. See Fig. 1.	4MC	(Band 3) 4MC	"	A20	Turn to MINIMUM capacity then clockwise and peak on first signal.
12.	" ANT. TERM.	2MC	(Band 3) 2MC	"	A21	Adjust for maximum output. Repeat Steps 11 and 12.
13.	SIGN. GEN. 15mmf 15mmf R	3.8MC	(Band 3) 3.8MC	"	A22, A23	Adjust for maximum output.
14.	OUTP. G	2.2MC	(Band 3) 2.2MC	"	A24, A25	Adjust for maximum output. Repeat Steps 13 and 14.
15.	FIG. 1 Ø A	9MC	(Band 4) 9MC	"	A26	Turn to MINIMUM capacity then clockwise and peak on first signal.
16.	"	4MC	(Band 4) 4MC	"	A27	Adjust for maximum output.
17.	"	8.5MC	(Band 4) 8.5MC	"	A28, A29	Adjust for maximum output.
18.	"	4.4MC	(Band 4) 4.4MC	"	A30, A31	Adjust for maximum output. Repeat Steps 17 and 18.
19.	"	9.7MC	(Band 5) 9.7MC	"	A32	Rotate counterclockwise two turns then clockwise for second peak.
20.	"	9.7MC	(Band 5) 9.7MC	"	A33, A34	Adjust for maximum output.
21.	"	11.8MC	(Band 6) 11.8MC	"	A35	Rotate counterclockwise two turns then clockwise very carefully for second peak.
22.	"	"	(Band 6) 11.8MC	"	A36, A37	Adjust for maximum output while rocking tuning gang.
23.	"	15.2MC	(Band 7) 15.2MC	"	A38	Rotate counterclockwise two turns then clockwise for second peak.
24.	"	"	(Band 7) 15.2MC	"	A39, A40	Adjust for maximum output while rocking tuning gang.
25.	"	17.8MC	(Band 8) (17.8MC	"	A41	Rotate counterclockwise two turns then clockwise for second peak.
26.	"	"	(Band 8) 17.8MC	"	A42, A43	Adjust for maximum output while rocking tuning gang.
27.	"	21.6MC	(Band 9) 21.6MC	"	A44	Rotate counterclockwise two turns then clockwise for second peak.
28.	"	"	(Band 9) 21.6MC	"	A45, A46	Adjust for maximum output while rocking tuning gang.
29.	Loop	1600KC	(Band 2) 1600KC	"	A47	Connect remote antenna to radio. Lay lead-in wire out straight and disassemble remote antenna case. A47 is inside case. Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.



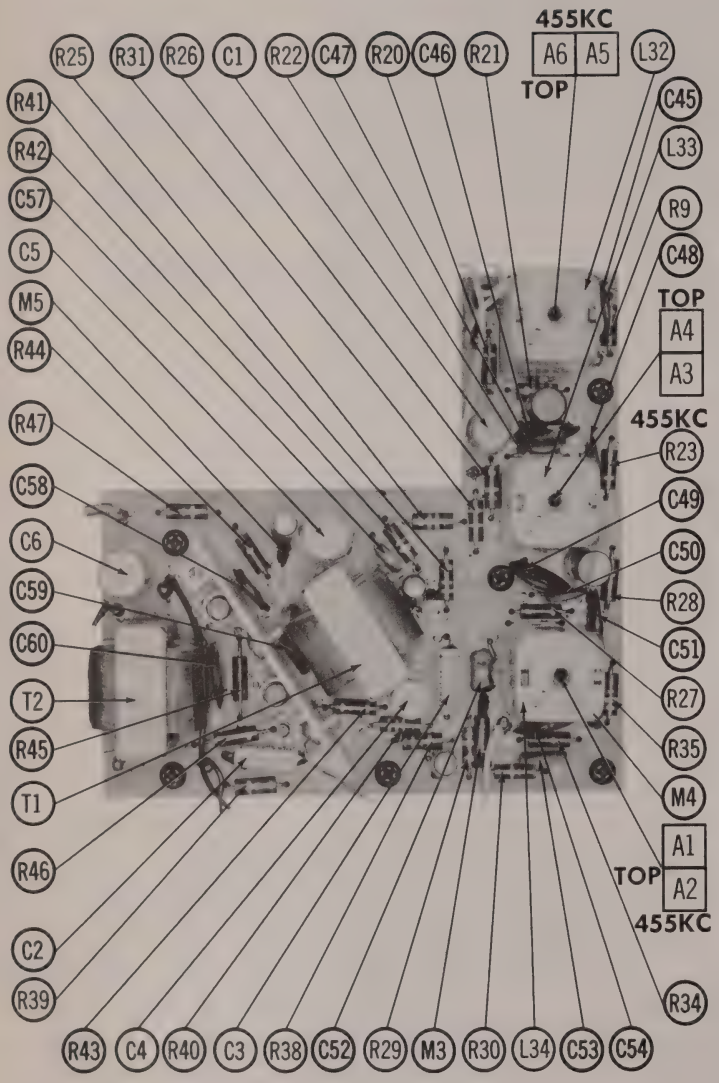
RF-OSC. CHASSIS – CAPACITOR & RESISTOR IDENT.



RF-OSC. CHASSIS – ALIGNMENT IDENT. (A7-A26)



CHASSIS-TOP VIEW



PRINTED BOARD-TOP VIEW

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N370	RF Amplifier		2N370		2N370	PNP
X2	2N372	Mixer		2N372		2N372	PNP
X3	2N371	Oscillator		2N371		2N371	PNP
X4	2N373	1st IF Amplifier		2N373		2N373	PNP
X5	2N373	2nd IF Amplifier		2N373		2N373	PNP
X6	2N406	AF Amplifier		2N406	2N362	2N406	PNP
X7	2N406	Driver		2N406	2N362	2N406	PNP
X8	2N217 *	Output		2N217	2N632	2N217	PNP) Matched
X9	2N217 *	Output		2N217	2N632	2N217	PNP) Pair

* Admiral Part #57B1-43, supplied in matched pairs.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	ADMIRAL PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	40	3	67B32-9	BCD3035	ECPA214	PET140	ML40-6	VL-1043	
C2	10	3	67B35-6	PWE3010	NLW10-3	TT3X10	ML10-6	TE-1053	
C3	10	3	67B35-6	PWE3010	NLW10-3	TT3X10	ML10-6	TE-1053	
C4	90	3	67B32-10	BCD3100	ECPB417	PET1400	ML100-3	VL-1051	
C5	100	12	67B32-6	BCD12100	ECPB417	PET1500	ML100-15	VL-1140	
C6	100	12	67B32-6	BCD12100	ECPB417	PET1500	ML100-15	VL-1140	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C7	5		SI 5	DD-050	L10V5	CCD-050	GP550	10TS-V50
C8	.9-7	#66A7-4				420		
C9	.9-7	#66A7-4				420		
C10	3900 5%		1464-0039		1R5D39	CM-20B-392J	MCJ462.5	MS-239
C11	47 NPO 5%			DTZ-47	C10Q47C	CCTO-470	CNO-447	10TCC-Q47
C12	47 NPO 5%			DTZ-47	C10Q47C	CCTO-470	CNO-447	10TCC-Q47
C13	1.5-20	#66A7-5				421		
C14	3-35	#66A7-6				422		
C15	3-35	#66A7-6				422		
C16	.47mfd 3V			UK-474				HY-130
C17	.47mfd 3V			UK-474				HY-130
C18	.47mfd 3V			UK-474				HY-130
C19	39 NPO 5%			TCZ-39	C10Q39C	CCTO-390	CNO-439	10TCC-Q39
C20	68 NPO 5%			TCZ-68	C10Q68C	CCTO-680	CNO-468	10TCC-Q68

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C21	7-100	#66A7-8				423		
C22	14-150	#66A7-7				424		
C23	1.5-20	#66A7-5				421		
C24	3-35	#66A7-6				422		
C25	50000		BPD-05	DD-503	H-05S5		GP150	5HK-S50
C26	.47mfd 3V			UK-474				HY-130
C27	82 NPO 5%			TCZ-82	C10Q82C	CCTO-820	CNO-482	10TCC-Q82
C28	47 NPO 5%			DTZ-47	C10Q82C	CCTO-470	CNO-447	10TCC-Q47
C29	200 5%		1469-0002	TCZ-200	5R5T2	CM-19B-201J	MCE237	MS-320
C30	470 5%		1469-00047		5R5T47	CM-19B-471J	MCJ244	MS-347
C31	2200 5%		1469-0022		1R5D22	CM-19B-222J	MCJ459	MS-222
C32	3900 5%		1469-0039		1R5D39	CM-20B-392J	MCJ462.5	MS-239
C33	7-100	#66A7-8				423		
C34	14-150	#66A7-7				424		
C35	3-35	#66A7-6				422		
C36	7-100	#66A7-8				423		
C37	50000		BPD-05	DD-503	H-05S5		GP150	5HK-S50
C38	20000		BPD-02	DD-203	H-05S2	CCD-203	B-120	5HK-S20
C39	470		BPD-00047	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C40	250 10%		DI-250	DD-251	Li0T25	CCD-251	GP325	10TS-T25
C41	50000		BPD-05	DD-503	H-05S5		GP150	5HK-S50
C42	39 NPO 5%			TCZ-39	C10Q39C	CCTO-390	CNO-439	10TCC-Q39
C43	3.5	#66B26-9						
C44	100 NPO 5%			TCZ-100	C10T1C	CCTO-101	CNO-310	10TCC-T10
C45	50000		BPD-05	DD-503	H-05S5		GP150	5HK-S50
C46	50000		BPD-05	DD-503	H-05S5		GP150	5HK-S50
C47	.47mfd 3V			UK-474				HY-130
C48	50000		BPD-05	DD-503	H-05S5		GP150	5HK-S50
C49	50000		BPD-05	DD-503	H-05S5		GP150	5HK-S50
C50	.47mfd 3V	#65B45-16		UK-474				HY-130
C51	50000		BPD-05	DD-503	H-05S5		GP150	5HK-S50
C52	39 NPO 5%			TCZ-39	C10Q39C	CCTO-390	CNO-439	10TCC-Q39
C53	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C54	50000		BPD-05	DD-503	H-05S5		GP150	5HK-S50
C55	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C56	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C57	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C58	3900		BPD-004	DD-392	L10D39	CCD-392	GP239	10TS-D39
C59	3900		BPD-004	DD-392	L10D39	CCD-392	GP239	10TS-D39
C60	50000		BPD-05	DD-503	H-05S5		GP150	5HK-S50

Admiral Part Number.

PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	ADMIRAL PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	200K 100K Tap	½	75C2-26	ABT-56	A47F-200K	B13-130X		Volume
B	Shaft			AK-8	RS-3/16	SK9		
C	Switch			KR-1	SWE-12	76-1		Power Off-On
R2A	1meg	½	75D13-104	B-69	A47-1meg-S	B11-137	U54	Tone
B	Shaft			AK-8	RS-3/16	SK9	DS-37	

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R3	10meg	
R4	1000Ω	
R5	10Ω	
R6	1000Ω	
R7	4700Ω	
R8	82K	
R9	1000Ω	
R10	20K	
R11	100K	
R12	20K	#61A27-2
R13	470Ω	
R14	200Ω	
R15	200Ω	
R16	120Ω	
R17	470Ω	

ITEM No.	RATING	REMARKS
R18	10K	
R19	10K	
R20	1000Ω	
R21	43K	
R22	820Ω	
R23	1000Ω	
R24	470Ω	
R25	18K	
R26	39K	
R27	1000Ω	
R28	100Ω	
R29	5600Ω	
R30	120Ω	
R31	2700Ω	
R32	3300Ω	

ITEM No.	RATING	REMARKS
R33	75K	
R34	5100Ω	
R35	180K	
R36	100K	
R37	10K	
R38	3.3meg	
R39	1meg	
R40	56K	
R41	3300Ω	
R42	15K	
R43	820Ω	
R44	5100Ω	
R45	10Ω	
R46	10Ω	
R47	100Ω	

‡ Admiral Part Number, Temperature Compensating.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		ADMIRAL PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	LW Loopstick	69C241-1				
L2	Int. BC Loopstick	69C241-2				
L3	Ext. BC Loopstick	69C241-3				
L4	LW Ant. Loading Coil	69B224-2				
L5	BC Ant. Loading Coil	69B224-3				
L6	455KC Trap	69B216-2				Includes C10
L7	Amateur Ant. Coil	69D237-19				
L8	SW Ant. Coil	69D237-20				
L9	31M Ant. Coil	69D237-21				
L10	25M Ant. Coil	69D237-22				
L11	19M Ant. Coil	69D237-23				
L12	16M Ant. Coil	69D237-24				
L13	13M Ant. Coil	69D237-25				
L14	LW RF Coil	69D237-1				
L15	BC RF Coil	69D237-2				
L16	Amateur RF Coil	69D237-3				
L17	SW RF Coil	69D237-4				
L18	31M RF Coil	69D237-5				
L19	25M RF Coil	69D237-6				
L20	19M RF Coil	69D237-7				
L21	16M RF Coil	69D237-8				
L22	13M RF Coil	69D237-9				
L23	LW Osc. Coil	69D237-10				
L24	BC Osc. Coil	69D237-11				
L25	Amateur Osc. Coil	69D237-12				
L26	SW Osc. Coil	69D237-13				
L27	31M Osc. Coil	69D237-14				
L28	25M Osc. Coil	69D237-15				
L29	19M Osc. Coil	69D237-16				
L30	16M Osc. Coil	69D237-17				
L31	13M Osc. Coil	69D237-18				
L32	1st IF Trans.	72C189-4				
L33	2nd IF Trans.	72C189-5				
L34	3rd IF Trans.	72C189-6				

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	ADMIRAL PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1	1	79B76-3					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	ADMIRAL PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	170Ω CT	3-4Ω	79B86-1						

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	ADMIRAL PART No.	QUAM PART No.	
SP1	4"x 6"	PM	3-4Ω	78B157-1	46A15	

BATTERIES

ITEM No.	VOLTAGE	ADMIRAL PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	1.5V	*		2 *		A-100 *		M-13R *	* 8 Required (Radio)
M2	1.5V	‡		2 ‡		A-100 ‡		M-13R ‡	‡ 1 Required (Pilot Light)

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		ADMIRAL PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M3	1N295	1N295	1N636	1N295	1N295	AGC (Pigtail)
M4	1N295	1N295	1N636	1N295	1N295	Detector (Pigtail)
M5	TA141	57B1-29			CK879	Output Bias Rect.

MISCELLANEOUS

ITEM No.	PART NAME	ADMIRAL PART No.	NOTES
M6	Tuning Cap.	68C74-1	3 Gang
M7	Switch	77D94-1	Band
M8	Switch	77B59-3	Radio-Phone (DPDT, Slide Type)
M9	Switch	76A43-1	Pilot Lite (Push Type)
M10	Antenna	69C236-1	Telescopic

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	20C25-5	Tuning, Band Selector
Knob	20B26-1	Volume, Tone
Dial Scale	21D124-1	
Pointer	25A71-1	Band Indicator
Pointer	25A69-1	Dial
Selector	23D365-4	Time Zone
Chart	23D365-3	Time Zone
Cabinet Top	750C181-1	Assembly
Door Assembly	700D183-1	Front
Door Assembly	750C182-1	Rear
Handle	33D3152	

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

PHOTOFACT® Folder

ARKAY
MODEL SP-6

ARKAY
MODEL SP-6

ARKAY
MODEL SP-6

TRADE NAME	Arkay Model SP-6		
MANUFACTURER	Arkay International, Inc., 88-06 Van Wyck Expressway, Jamaica 18, N. Y.		
TYPE SET	AC Operated 6 Tube Stereo Audio Amplifier		
POWER SUPPLY	100-125 Volts, 60 Cycles	RATING	23 Watts, .2 Amp. @ 117 Volts AC

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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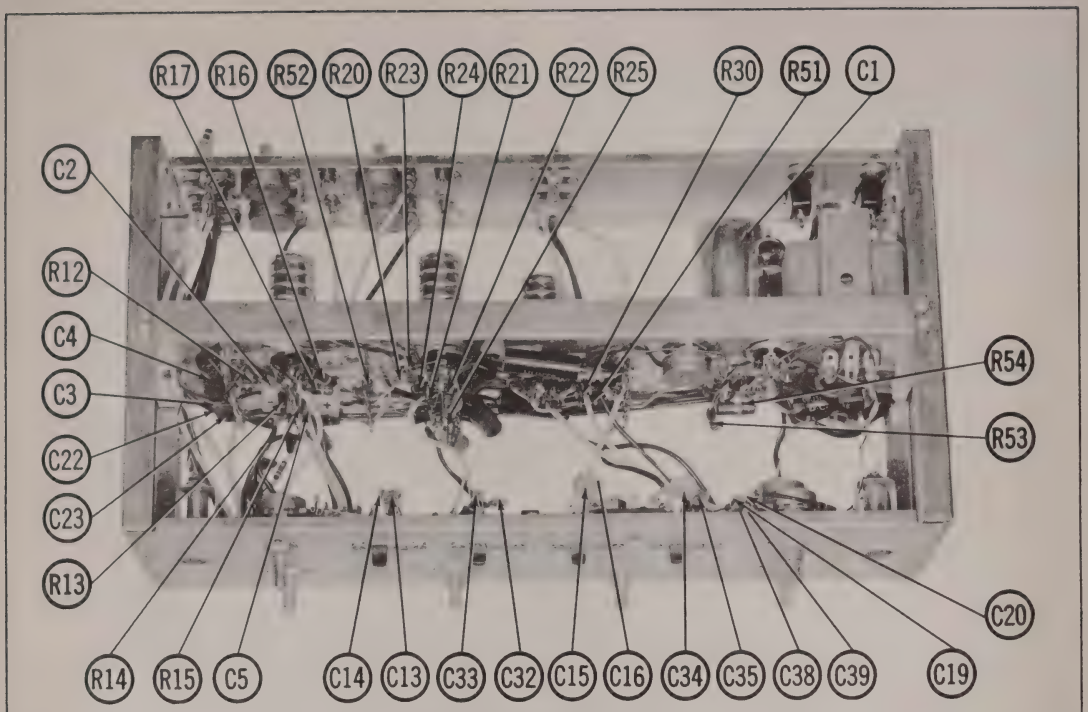
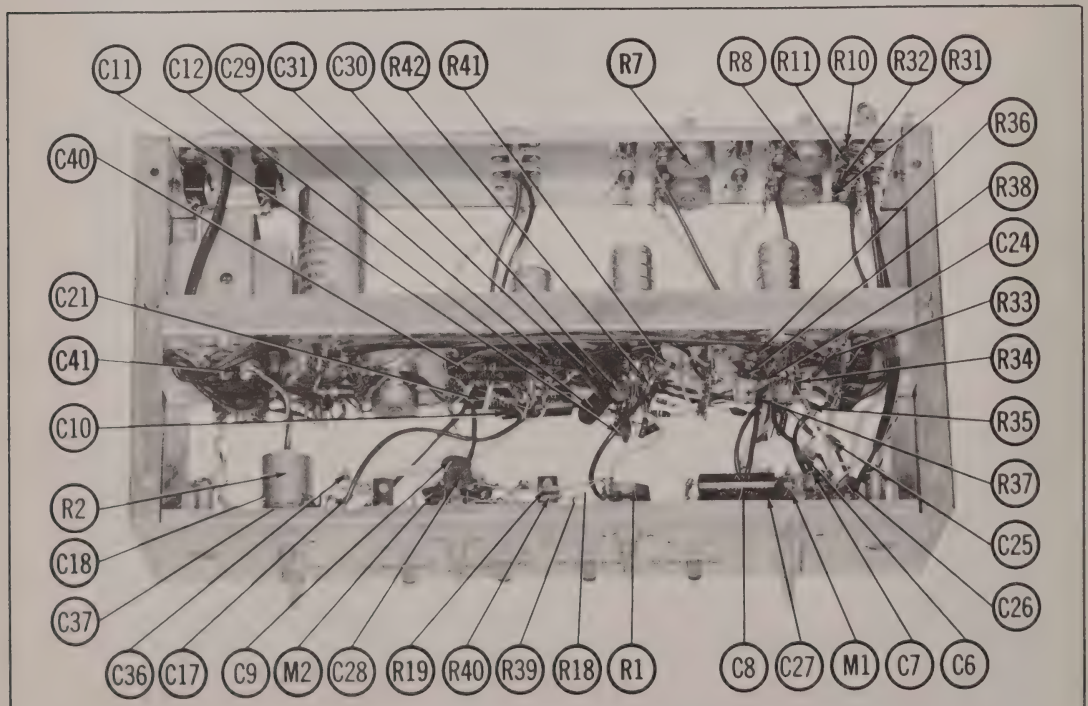
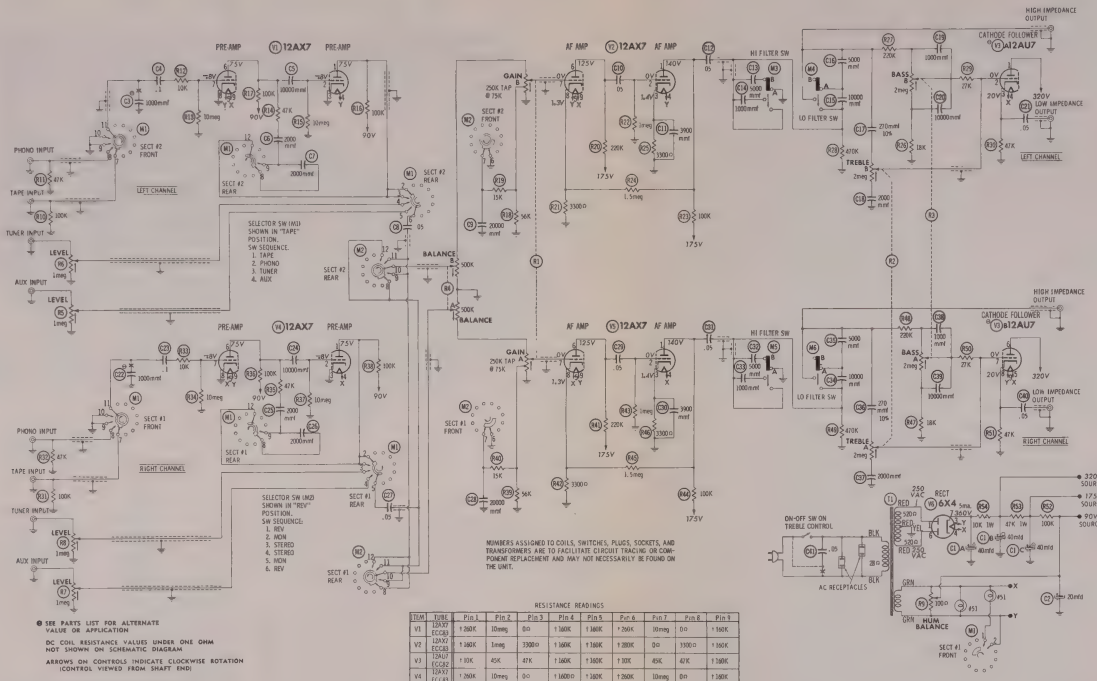


CHASSIS BOTTOM VIEW



CHASSIS BOTTOM VIEW



● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7 ECC83	1 260K	10meg	0Ω	1 160K	1 160K	1 260K	10meg	0Ω	1 160K
V2	12AX7 ECC83	1 160K	1meg	330Ω	1 160K	1 160K	1 280K	0Ω	330Ω	1 160K
V3	12AU7 ECC82	1 10K	45K	47K	1 160K	1 160K	1 10K	45K	47K	1 160K
V4	12AX7 ECC83	1 260K	10meg	0Ω	1 160Ω	1 160K	1 260K	10meg	0Ω	1 160K
V5	12AX7 ECC83	1 160K	1meg	330Ω	1 160K	1 160K	1 280K	0Ω	330Ω	1 160K
V6	6X4	52Ω	NC	1 360K	1 160K	NC	52Ω	1		

1 THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
1 MEASURED FROM PIN 7 OF V6. NC NO CONNECTION.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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ARKAY MODEL SP-6

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (GENERAL ELECTRIC • RAYTHEON • SYLVANIA •)
V1	Left Channel Preamp.	12AX7/ECC83
V2	Left Channel AF Amp.	12AX7/ECC83
V3	Left Channel Cath. Follower-Right Channel Cath. Follower	12AU7/ECC82 (12AX7) *
V4	Right Channel Preamp.	12AX7/ECC83
V5	Right Channel AF Amp.	12AX7/ECC83
V6	Rectifier	6X4

* Alternate

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA ARKAY PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲ 40	450		AFH3-44	C0350	FP238	TMT-3748	TVL-3787	
B	■ 40	450				TC78			
C	● 40	450							
C2	20	150		PRS1440	BBR20-150	TC45	TD-20-150	TVA-1410	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3	1000	Note 1	BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C4	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P1
C5	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C6	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C7	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C8	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S5
C9	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C10	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S5
C11	3900		BPD-004	DD-392	L10D39	CCD-392	GP239	10TS-D39
C12	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S5
C13	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C14	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C15	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C16	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C17	270 10%		DI-270	DD-271	L10T27	CCD-271	GP327	10TS-T27
C18	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C19	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C20	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C21	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S5
C22	1000	Note 1	BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C23	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P1
C24	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C25	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C26	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C27	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S5
C28	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C29	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S5
C30	3900		BPD-004	DD-392	L10D39	CCD-392	GP239	10TS-D39
C31	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S5
C32	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C33	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C34	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C35	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C36	270 10%		DI-270	DD-271	L10T27	CCD-271	GP327	10TS-T27
C37	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C38	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C39	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C40	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S5
C41	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S5

Note 1. Not used in some versions.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA ARKAY PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	250K		BA819-007					Gain, Right Channel
	75K Tap							
B	250K							Gain, Left Channel
	75K Tap							
R2A	2meg		BA818-027	B-76	AD47-2meg-Z		FA26A	Treble, Right Channel
B	2meg			SR-76	Not Req.		RU26A	Treble, Left Channel
C	Shaft			Not Req.	RS-2		CS3500	
D	Switch			KR-1	SWE-12		US41	Power On-Off
R3A	2meg		BA817-101	B-76	AD47-2meg-Z		FA26A	Bass, Right Channel
B	2meg			SR-76	Not Req.		RU26A	Bass, Left Channel
C	Shaft			Not Req.	RS-2		CS3500	
R4A	500K		BA817-100	B-59	AD47-500K-S		FA55L	Balance, Right Channel
B	500K			SR-59	Not Req.		RU55L	Balance, Left Channel
C	Shaft			Not Req.	RS-2		CS3500	
R5A	1meg		FM8-2	BX-69	B47-1meg-S	B11-137	SU-54	Aux. Level, Left Channel
B	Shaft			Not Req.	Not Req.	TM4	Not Req.	
R6A	1meg		FM8-2	BX-69	B47-1meg-S	B11-137	SU-54	Tuner Level, Left Channel
B	Shaft			Not Req.	Not Req.	TM4	Not Req.	
R7A	1meg		FM8-2	BX-69	B47-1meg-S	B11-137	SU-54	Aux. Level, Right Channel
B	Shaft			Not Req.	Not Req.	TM4	Not Req.	
R8A	1meg		FM8-2	BX-69	B47-1meg-S	B11-137	SU-54	Tuner Level, Right Channel
B	Shaft			Not Req.	Not Req.	TM4	Not Req.	
R9A	100Ω		BA269-173	AB-1			U1	Hum Balance
B	Shaft			AK-1			Not Req.	

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R10	100K	
R11	47K	
R12	10K	
R13	10meg	
R14	47K	
R15	10meg	
R16	100K	
R17	100K	
R18	56K	
R19	15K	
R20	220K	
R21	3300Ω	
R22	1meg	
R23	100K	
R24	1.5meg	

ITEM No.	RATING	REMARKS
R25	3300Ω	
R26	18K	
R27	220K	
R28	470K	
R29	27K	
R30	47K	
R31	100K	
R32	47K	
R33	10K	
R34	10meg	
R35	47K	
R36	100K	
R37	10meg	
R38	100K	
R39	56K	

ITEM No.	RATING	REMARKS
R40	15K	
R41	220K	
R42	3300Ω	
R43	1meg	
R44	100K	
R45	1.5meg	
R46	3300Ω	
R47	18K	
R48	220K	
R49	470K	
R50	27K	
R51	47K	
R52	100K	
R53	47K 1W	
R54	10K 1W	

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	PRI.	SEC. 1	SEC. 2	ARKAY PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	117V @ .2A	500VCT @ .005A	6.3V @ 2.4A	SP-6						

MISCELLANEOUS

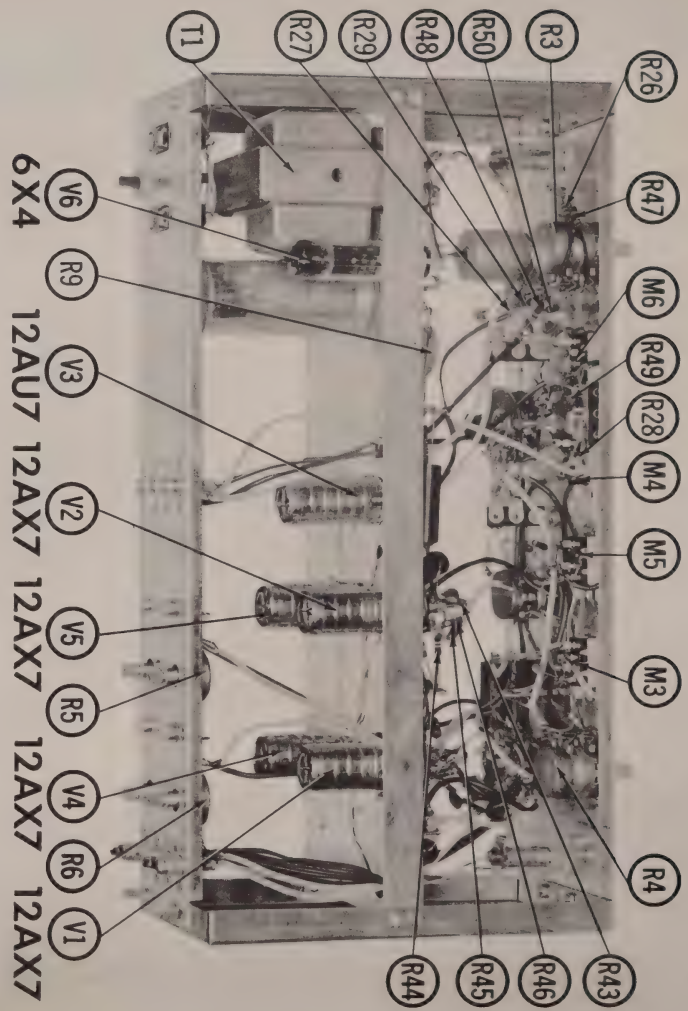
ITEM No.	PART NAME	ARKAY PART No.	NOTES
M1	Switch		Function (Rotary Wafer)
M2	Switch		Mode (Rotary Wafer)
M3	Switch		Hi Filter, Left (DPDT Slide Type)
M4	Switch		Lo Filter, Left (DPDT Slide Type)
M5	Switch		Hi Filter, Right (DPDT Slide Type)
M6	Switch		Lo Filter, Right (DPDT Slide Type)

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

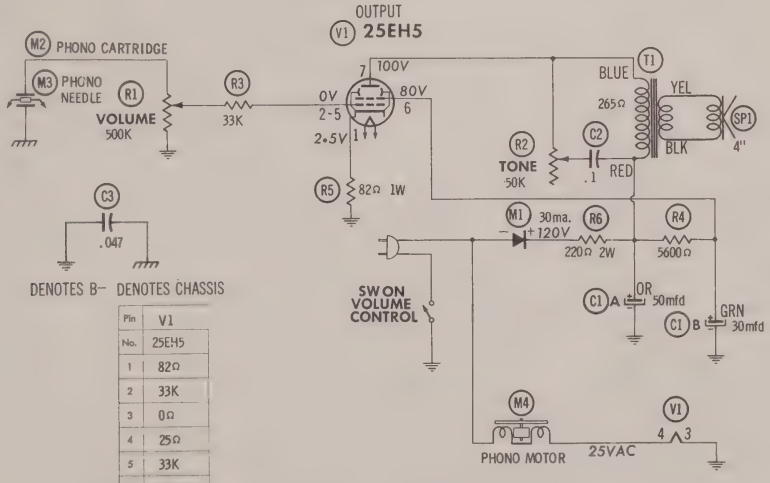
CHASSIS—TOP VIEW



PHOTOFACT® Folder

COLUMBIA MODEL C1002-T

TRADE NAME	Columbia Model C1002-T
MANUFACTURER	CBS Electronics, 100 Endicott Street, Danvers, Mass.
TYPE SET	AC Operated One Tube Phono Amplifier With 3 Speed Manual Record Player
POWER SUPPLY	110-120 Volts AC, 60 Cycles RATING 30 Watts, .35 Amp. @ 117 Volts AC (with Motor)



Pin No.	V1 25EH5
1	82Ω
2	33K
3	0Ω
4	25Ω
5	33K
6	†5800Ω
7	†485Ω

† MEASURED FROM OUTPUT OF M1.

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COLUMBIA MODEL C1002-T
COLUMBIA MODEL C1002-T
SET 502 FOLDER 6

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
	♦ GENERAL ELECTRIC ♦	RAYTHEON ♦	SYLVANIA ♦		
V1	Output	25EH5			

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA COLUMBIA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	50	150	11B759	PRS2200	BBRD5315	TCD497	TDLD-8	TVA-2450	
B	30	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	.1 400V		P488N-1	DF-104	CUB2P1	4DP-3-104	GEM-401	4TM-P1
C3	.047 400V		P488N-047	DD*503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA COLUMBIA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K	½	9B612	B-60-S	A47-500K-Z	Q13-133	U48	Volume
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
C	Switch			Not Req.	SWE-12	76-1	US-26	Power Off-On
R2A	50K	½	9B639	B-31	A47-50K-S	Q11-123	U35	
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R3	33K	
R4	5600Ω	

ITEM No.	RATING	REMARKS
R5	82Ω 1W	

ITEM No.	RATING	REMARKS
R6	220Ω 2W	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA COLUMBIA PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	3200Ω	3-4Ω	3B241	A-3025	AU-605	A-3332	26S58	S-12X	

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA COLUMBIA PART No.	QUAM PART No.	NOTES
SP1	4"	PM	3-4Ω	1B102	4A1	

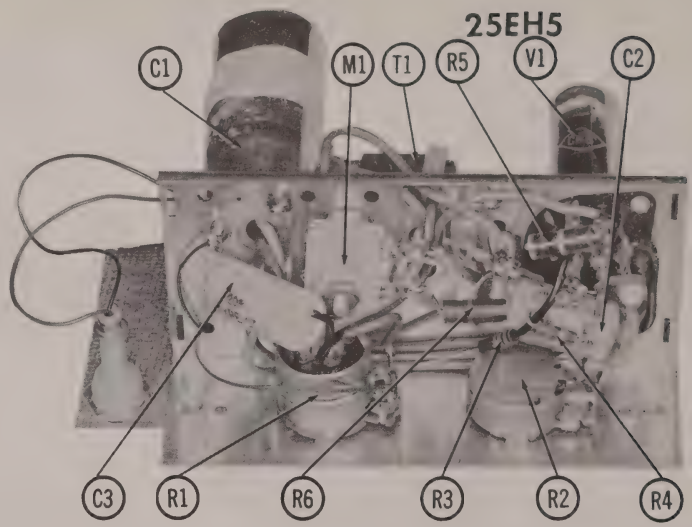
RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA COLUMBIA PART No.	ITT PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.030A	10B603 *	1234AH *	1N1763 ♦	65 *	SR200 ♦	* Selenium ♦ Silicon

PHONO CARTRIDGE

ITEM No.	COLUMBIA PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE	JENSEN PART No. CARTRIDGE	JENSEN PART No. NEEDLE	SONOTONE PART No. CARTRIDGE	SONOTONE PART No. NEEDLE
M2		420-TS-TE		46T		49			

CHASSIS—BOTTOM VIEW



PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA COLUMBIA PART No.	REPLACEMENT DATA JENSEN PART No.	REMARKS
M3		CRA-55 † or CRA-55D ♦ & CRA-55X † or CRA-55XD †♦	† Jewel ♦ Diamond

MISCELLANEOUS

ITEM No.	PART NAME	COLUMBIA PART No.	NOTES
M4	Motor	6B314	Turntable Drive (90V, 3 Speed)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	8B519	Volume, Tone
Cabinet	17B869	

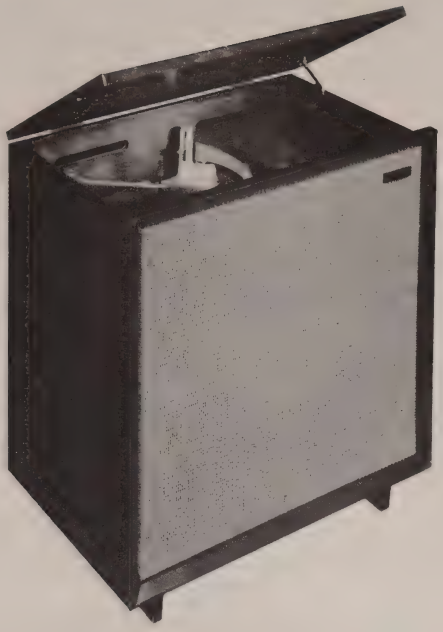
WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

PHOTOFACT® Folder

COLUMBIA
MODELS C-1150M, W

COLUMBIA
MODELS C-1150M, W

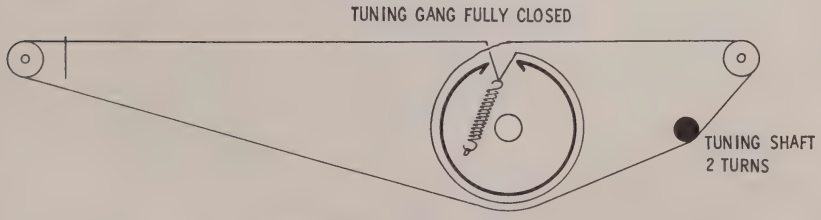


COLUMBIA
MODELS C-1150M, W

TRADE NAME	Columbia Models C-1150M, C-1150W		
MANUFACTURER	CBS Electronics, 100 Endicott Street, Danvers, Mass.		
TYPE SET	AC Operated 7 Tube FM-AM Tuner, 3 Tube Stereo Amplifier and 4 Speed Automatic Record Changer		
POWER SUPPLY	110-120 Volts AC	RATING	67 Watts, .71 Amp. @ 117 Volts AC (Radio)
TUNING RANGE	BROADCAST 540 - 1650KC	FREQ. MOD.	88 - 108MC

FOR SERVICE INFORMATION ON RECORD CHANGER - SEE MONARCH UA8 - PHOTOFACT SET 381 FOLDER 11 OR RECORD CHANGER MANUAL RC-11

DIAL CORD STRINGING



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SET 502 FOLDER 7

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use only enough generator output to provide a usable indication.
Suggested Alignment Tools: A1 thru A4 and A7 thru A14 ... GENERAL CEMENT #5097, 8727
WALSCO #2515
A5, A6, A16, A17 ..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520
A15 ..... GENERAL CEMENT #8721, 8722
WALSCO #2519

AM ALIGNMENT - SELECTOR IN AM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to pin 7 (grid) of AM Converter. Low side to chassis.	455KC (400∿ Mod.)	(AM) Tuning gang fully open	AC probe across Output Jack.	A1, A2, A3, A4	Adjust for maximum deflection.
2.	Loop	1650KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.	"	1400KC	Tune to 1400KC signal	"	A6	Adjust for maximum deflection while rocking tuning gang.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM - SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
4.	High side thru .01mfd to pin 9 (grid) of FM Mixer. Low side to chassis.	10.7MC (Unmod.)	(FM) Point of non-interference	DC probe to point (A). Common to chassis.	A7, A8, A9, A10, A11, A12	Adjust for maximum deflection.
5.	"	"	"	DC probe thru 1meg to point (B). Common to chassis.	A13	"
6.	"	"	"	DC probe to point (C). Common to chassis.	A14	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE - SELECTOR IN FM POSITION

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
4.	High side thru .01mfd to pin 9 (grid) of FM Mixer. Low side to chassis.	10.7MC (450KC Swp)	(FM) Point of non-interference	Vert. Amp. to point (A). Low side to chassis.	A7, A8, A9, A10, A11, A12	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown.
5.	"	"	"	Vert. Amp. thru 47K to point (B). Low side to chassis.	A13	"
6.	"	"	"	Vert. Amp. to point (C). Low side to chassis.	A14	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A13 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT - SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
7.	Across FM antenna terminals with 120Ω in each lead.	108MC (Unmod.)	(FM) 108MC	DC probe to point (A). Common to chassis.	A15, A16	Adjust for maximum deflection.
8.	"	95MC	95MC	"	A17	"

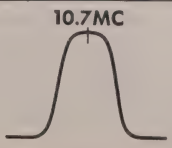


FIG. 1

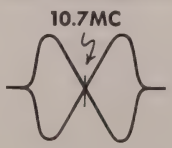
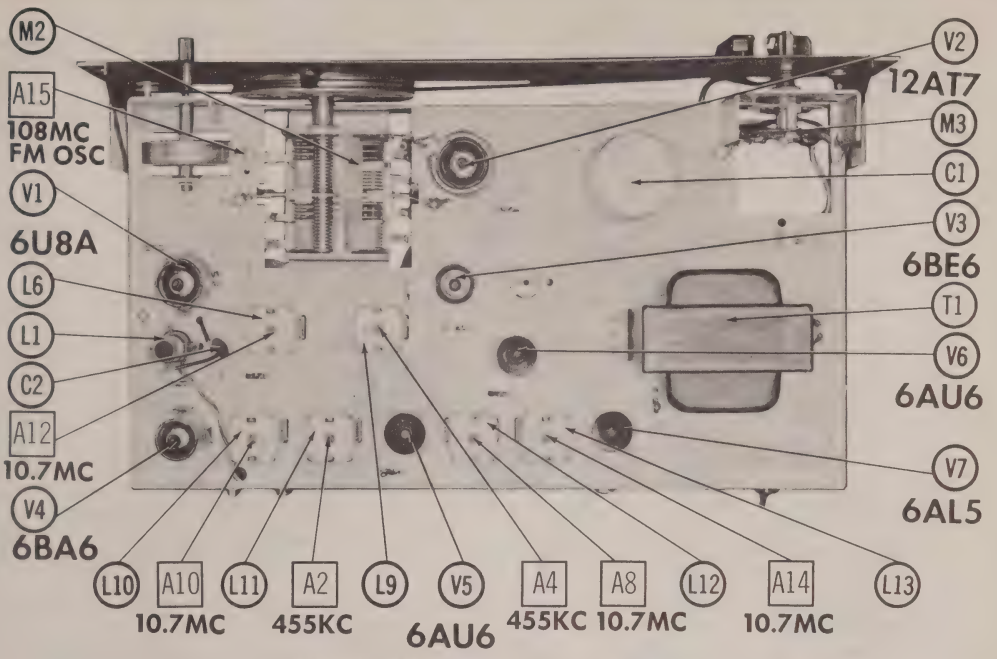
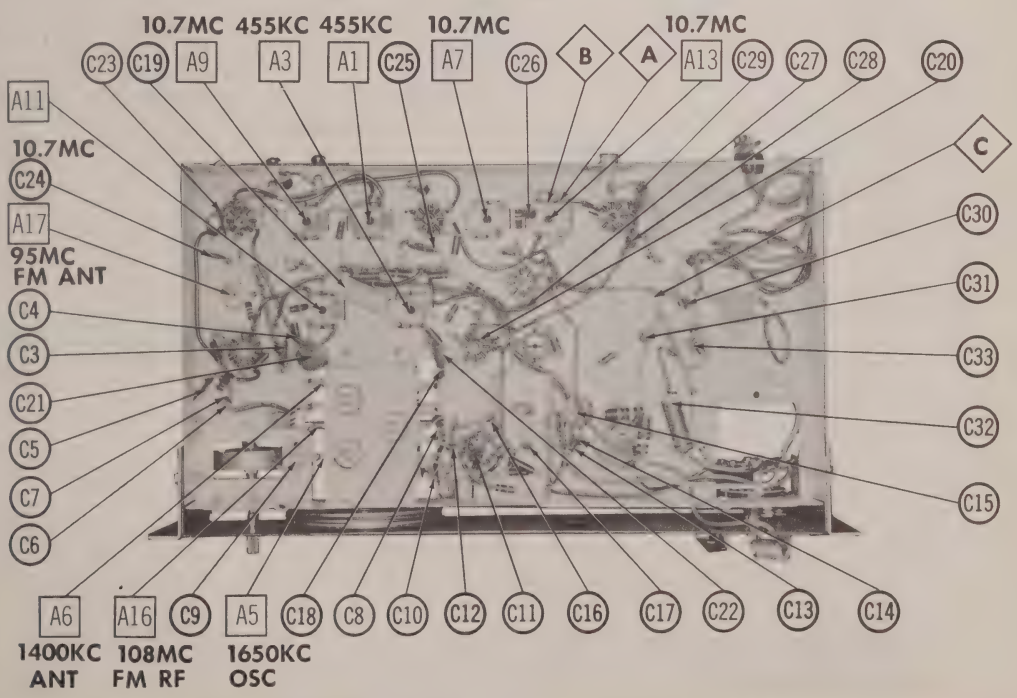


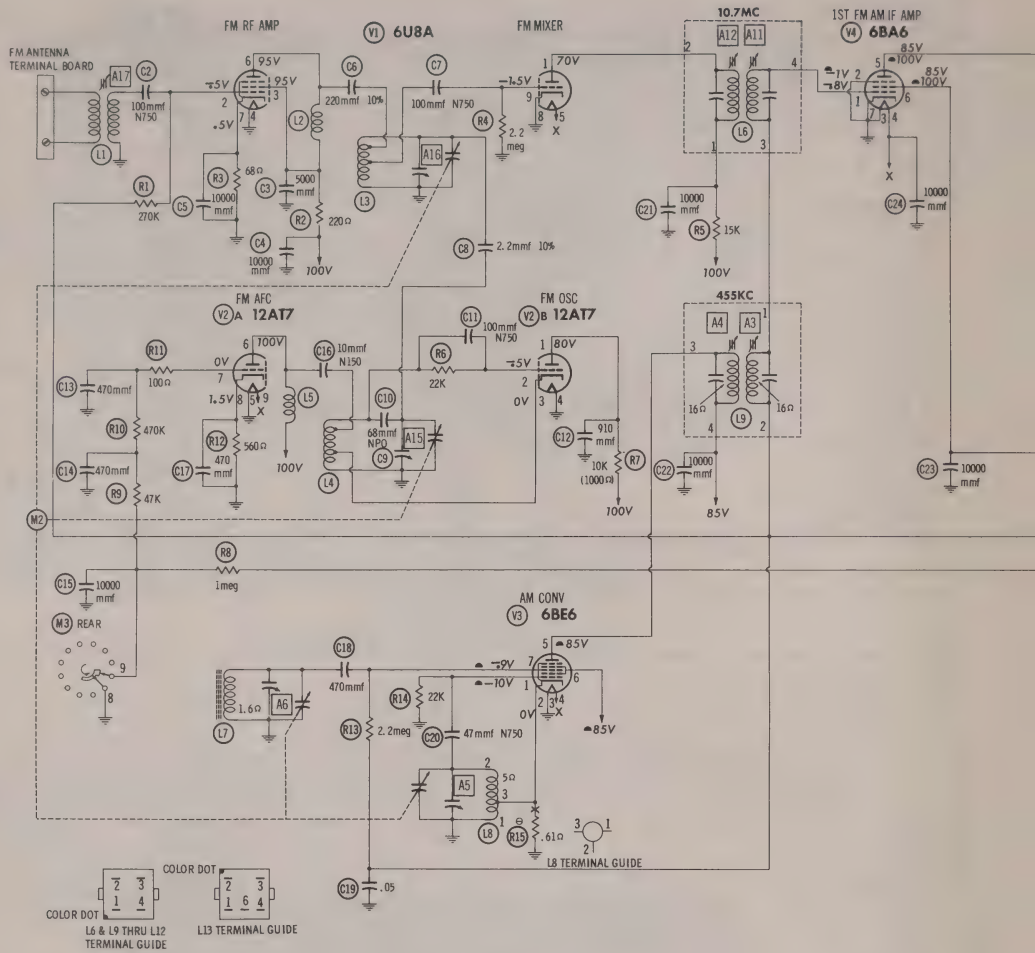
FIG. 2



TUNER CHASSIS — TOP VIEW



TUNER CHASSIS BOTTOM VIEW — ALIGNMENT & CAPACITOR IDENT.



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6U8A	†16K	2.7meg	†1000Ω	0Ω	.5Ω	†1000Ω	68Ω	0Ω	2.2meg
V2	12AT7	†11K	22K	.1Ω	0Ω	0Ω	†780Ω	520K ■1.7meg	560Ω	.5Ω
V3	6BE6	22K	.6Ω	0Ω	.5Ω	▬†4700Ω	▬†4700Ω	▬4.6meg		
V4	6BA6	2.4meg	0Ω	0Ω	.5Ω	†1800Ω	†1800Ω	0Ω		
V5	6AU6	220K	0Ω	0Ω	.5Ω	†2800Ω	†2800Ω	0Ω		
V6	6AU6	100K	0Ω	0Ω	.5Ω	†12K	†12K	0Ω		
V7	6AL5	0Ω	100K	.5Ω	0Ω	200K	0Ω	100K		

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED.
▬ MEASURED IN "AM" POSITION.
■ MEASURED IN "FM-AFC" POSITION.
† MEASURED FROM OUTPUT OF M1.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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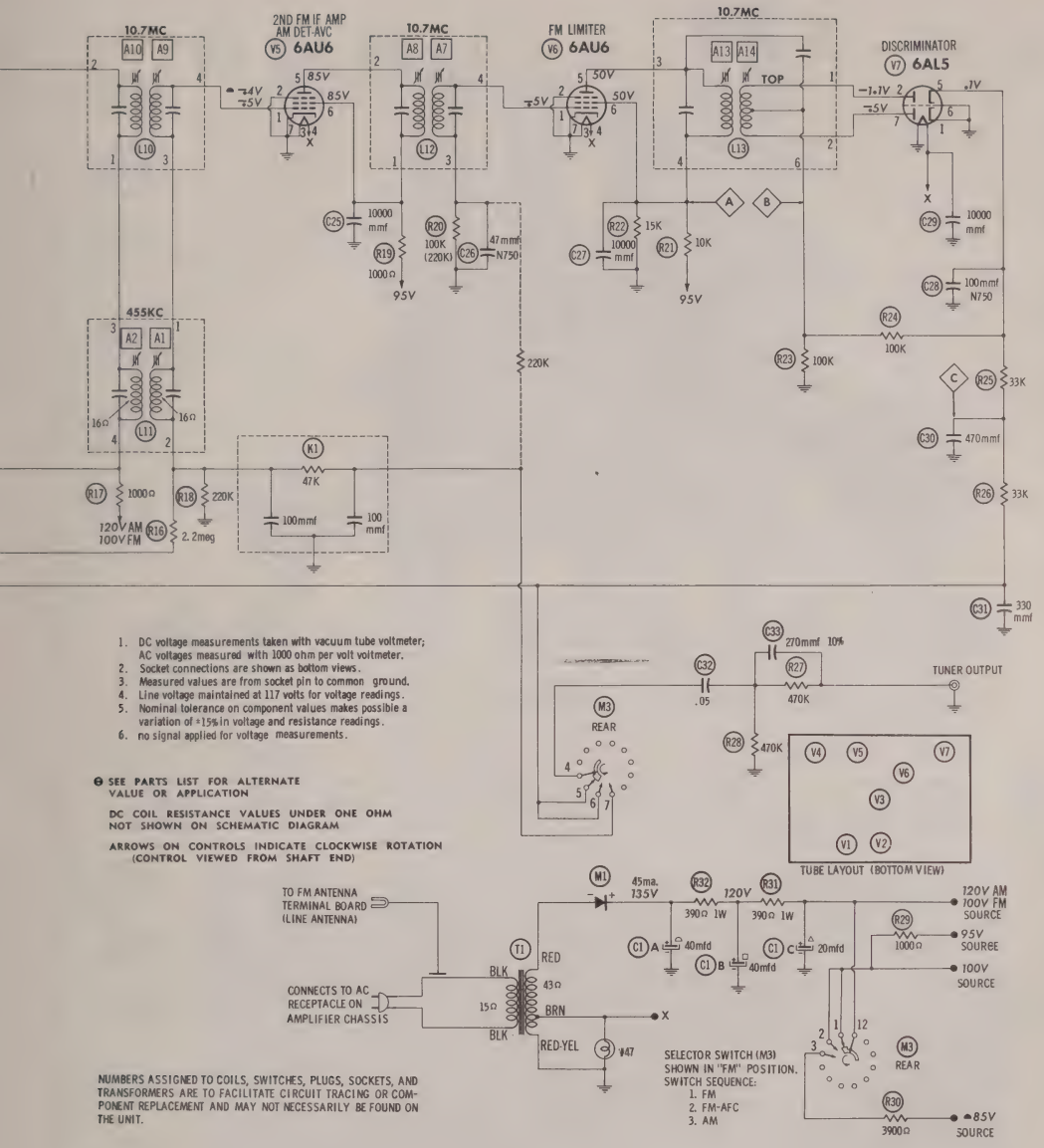
TUNER SCHEMATIC



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. no signal applied for voltage measurements.

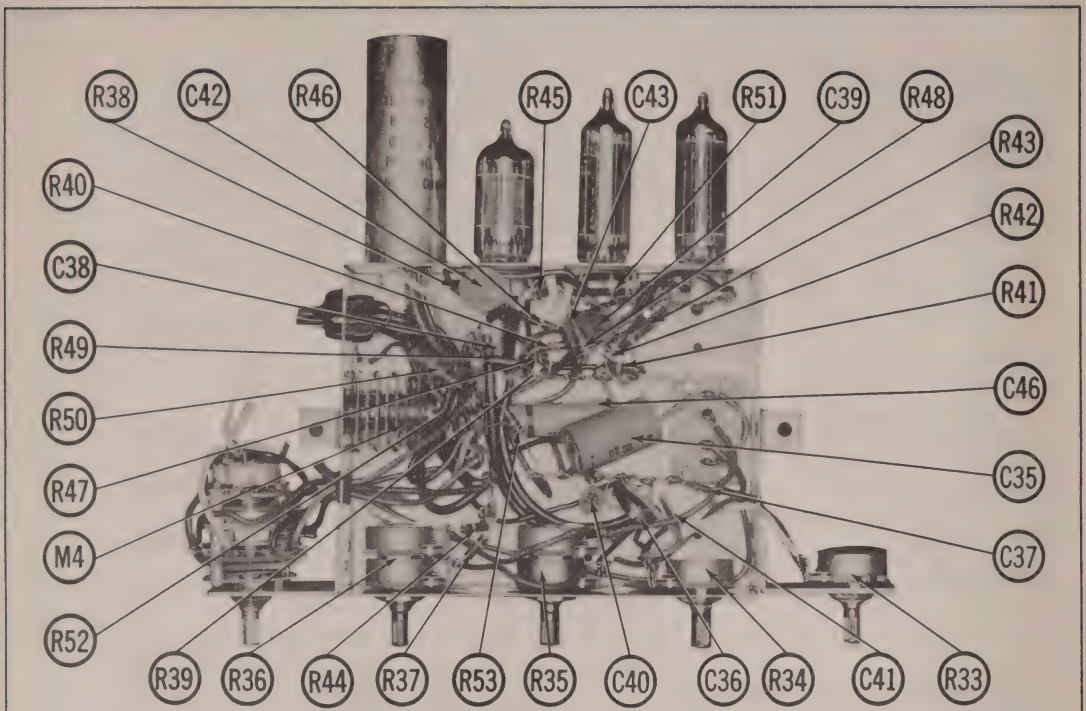
❶ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

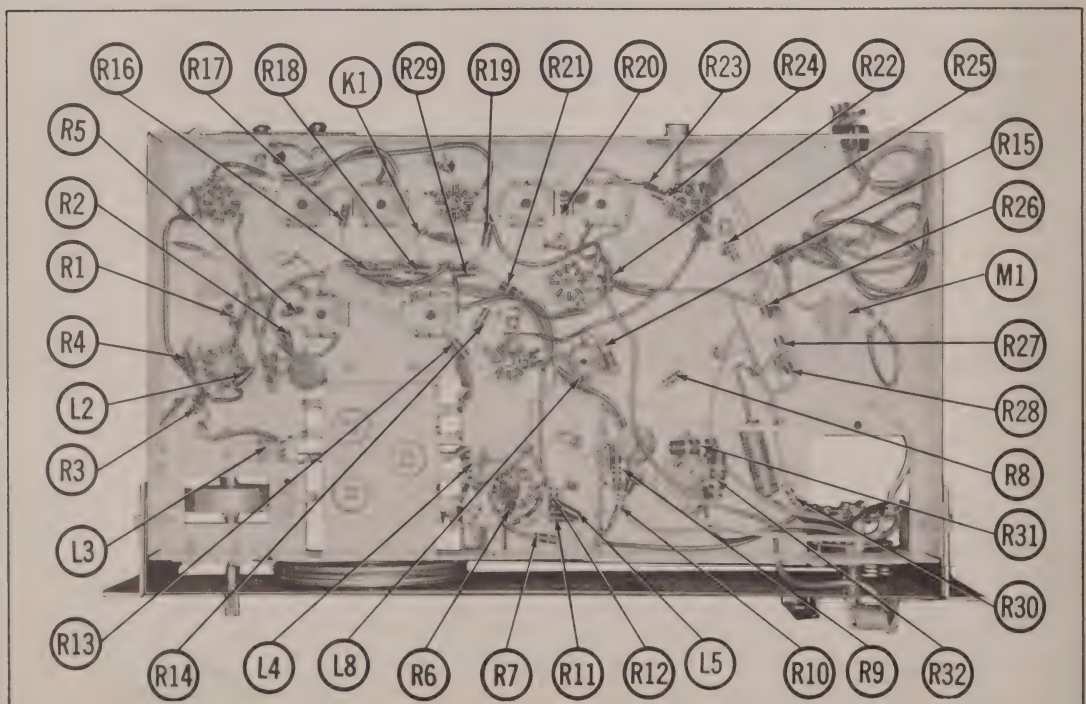
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

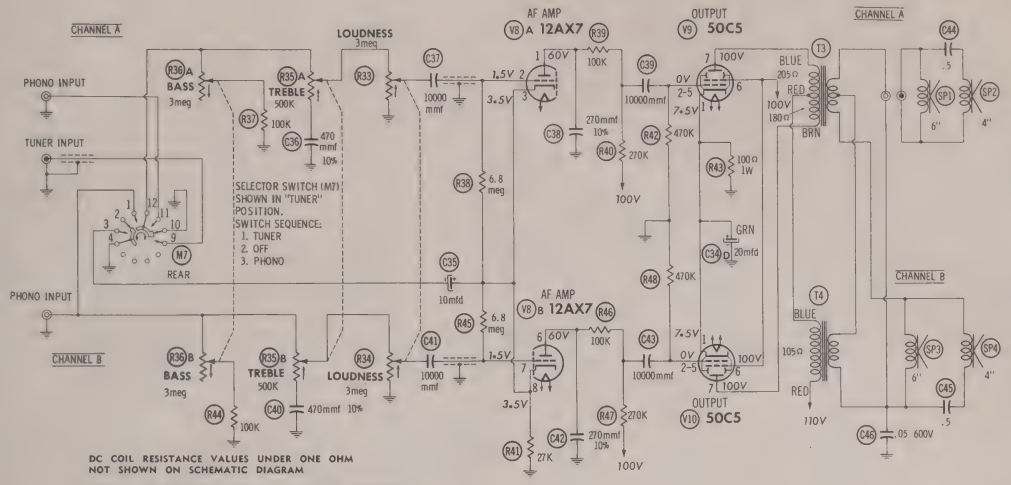
COLUMBIA
MODELS C-1150M, W

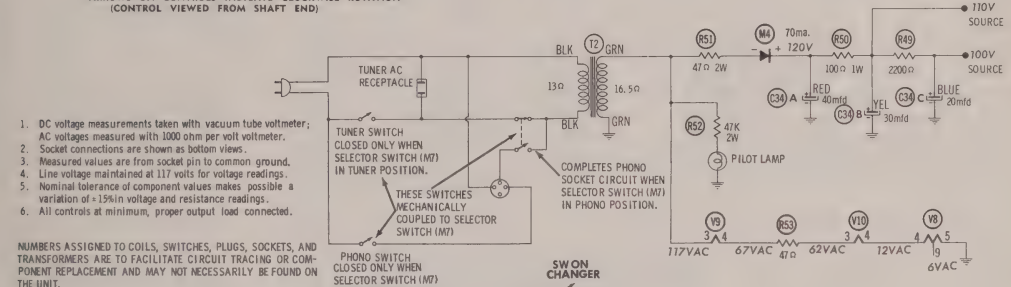


AMP CHASSIS – BOTTOM VIEW



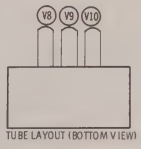
TUNER CHASSIS BOTTOM VIEW – RESISTOR, INDUCTOR & MISC. IDENT.




TUNER AC RECEPTACLE
TUNER SWITCH CLOSED ONLY WHEN SELECTOR SWITCH (M7) IN TUNER POSITION.
THESE SWITCHES MECHANICALLY COUPLED TO SELECTOR SWITCH (M7)
PHONO SWITCH CLOSED ONLY WHEN SELECTOR SWITCH (M7) IN PHONO POSITION.
COMPLETES PHONO SOCKET CIRCUIT WHEN SELECTOR SWITCH (M7) IN PHONO POSITION.
PILOT LAMP
110V SOURCE
100V SOURCE
117VAC
67VAC
62VAC
12VAC
6VAC

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.



TUBE LAYOUT (BOTTOM VIEW)

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V8	12AX7	††370K	6.8meg	27K	12Ω	0Ω	††370K	6.8meg	27K	6Ω
V9	50C5	100Ω	470K	160Ω	110Ω	470K	††2300Ω	††410Ω		
V10	50C5	100Ω	470K	62Ω	12Ω	470K	††2300Ω	††385Ω		

† MEASURED FROM OUTPUT OF M4.

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COLUMBIA
MODELS C-1150M, W

AMP SCHEMATIC

TUNER PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (GENERAL ELECTRIC • RAYTHEON • SYLVANIA)
V1	FM RF Amp. - FM Mixer	6U8A
V2	FM Osc. - FM AFC	12AT7
V3	AM Converter	6BE6
V4	1st FM - AM IF Amplifier	6BA6
V5	2nd FM IF Amplifier - AM Det. - AVC	6AU6
V6	FM Limiter	6AU6
V7	Discriminator	6AL5

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA COLUMBIA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲40	200	11G761	AFH2-56	B0440	FP217.87	TMD-31	TVLS-3482 *	
B	■40	200		PRS1580	BR4025	TC55	TD-20-250	TVA-1508	
C	▲20	200							

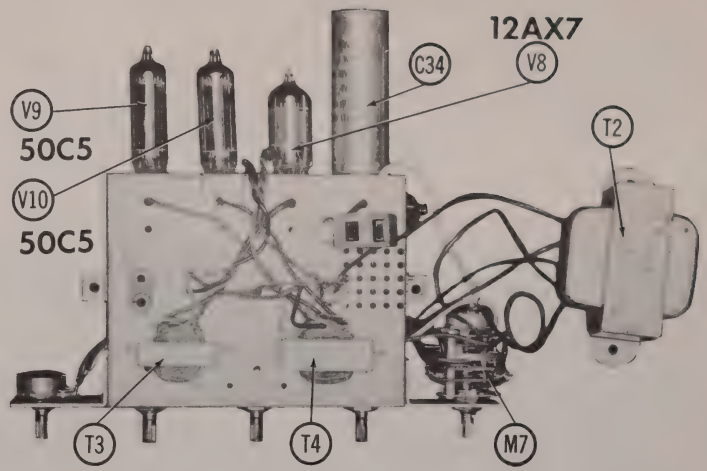
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	100 N750		N750-DI 100	DTN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10
C3	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C4	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C5	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C6	220 10%		DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
C7	100 N750		N750-DI 100	DTN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10
C8	2.2 10%		NPO-SI 2.2	TCZ-2R2	C10V22C	CCTO-2R2	CNO-522	10TCC-V22
C9		#20F337						
C10	68 NPO		NPO-SI 68	TCZ-68	C10Q68C	CCTO-680	CNO-468	10TCC-Q68
C11	100 N750		N750-DI 100	DTN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10
C12	910		DI-1000	DD-102	1R5D1	CCD-102	GP210	10TS-D10
C13	470		BPD-00047	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C14	470		BPD-00047	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C15	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C16	10 N150					*		10TCP-Q10
C17	470		BPD-00047	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C18	470		BPD-00047	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C19	.05 200V		P288N-05	DD-503	CUB4S47	4DP-3-503	GFM-415	2TM-S5
C20	47 N750		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C21	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C22	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C23	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10

AMP CHASSIS—TOP VIEW



TUNER PARTS LIST AND DESCRIPTIONS (Continued)

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C24	10000		BPD-01	DD-103	BYA10SI	CCD-103	B-110	5HK-S10
C25	10000		BPD-01	DD-103	BYA10SI	CCD-103	B-110	5HK-S10
C26	47 N750		N750-DI 47	DTN-47	C10Q47C	CCTN-470	CN7-447	10TCU-Q47
C27	10000		BPD-01	DD-103	BYA10SI	CCD-103	B-110	5HK-S10
C28	100 N750		N750-DI 100	DTN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10
C29	10000		BPD-01	DD-103	BYA10SI	CCD-103	B-110	5HK-S10
C30	470		BPD-00047	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C31	330		DI-330	DD-331	L10T33	CCD-331	B-330	10TS-T33
C32	.05 200V		P288N-05	DD-503	CUB2S5	4DP-3-503	GEM-415	2TM-S5
C33	270 10%		DI-270	DD-271	L10T27	CCD-271	GP327	10TS-T27

Columbia Part Number.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		COLUMBIA PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	FM Ant. Trans.	20F334				
L2	RF Choke	21F209	SW-631	4529		4.7uh
L3	FM RF Coil	20F336				
L4	FM Osc. Coil	20F335				
L5	RF Choke	21F210	SW-630	4606		2.7uh
L6	1st FM IF Trans.	20G360	FM-254	1463		
L7	Loopstick	20G362	BC-418	705-A		
L8	AM Osc. Coil	20G361	BC-394	70-OSC		
L9	1st AM IF Trans.	20F359	BC-352	12-C1	RF-1	
L10	2nd FM IF Trans.	20G360	FM-254	1463		
L11	2nd AM IF Trans.	20F330	BC-353	12-C2	RF-2	
L12	3rd FM IF Trans.	20G360	FM-254	1463		
L13	Discriminator	20F331	FM-253	1464		

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R1	270K	
R2	220Ω	
R3	68Ω	
R4	2.2meg	
R5	15K	
R6	22K	
R7	10K	(1000Ω) *
R8	1meg	
R9	47K	
R10	470K	
R11	100Ω	

ITEM No.	RATING	REMARKS
R12	560Ω	
R13	2.2meg	
R14	22K	
R15	0.61Ω	Note 1
R16	2.2meg	
R17	1000Ω	
R18	220K	
R19	1000Ω	
R20	100K	(220K) *
R21	10K	
R22	15K	

ITEM No.	RATING	REMARKS
R23	100K	
R24	100K	
R25	33K	
R26	33K	
R27	470K	
R28	470K	
R29	1000Ω	
R30	3900Ω	
R31	390Ω 1W	
R32	390Ω 1W	

* Alternate Value.

Note 1. Not used in some versions.

TRANSFORMER (POWER)

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	PRI.	SEC. 1	COLUMBIA PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	117V @ .3A	110V @ .045A Tap @ 6.3V @ 2.4A	2G121			PA-8421			

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT (Measured)	COLUMBIA PART No.	ITT PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
M1	.045A	10G617 *	RS065 *	1N1764 ♦	65 *	SR200 ♦	* Selenium ♦ Silicon

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	COLUMBIA PART No.	REPLACEMENT DATA	
K1	AM Diode RF Filter	100mmf, 100mmf, 47K		Aerovox Centralab Cornell-Dubilier Sprague	PA-97 PC-50 1li TMI D-1

MISCELLANEOUS

ITEM No.	PART NAME	COLUMBIA PART No.	NOTES
M2	Tuning Cap.	14G112	4 Gang (AM Sections: Ant 6-220mmf, Osc. 11-125mmf)
M3	Switch	19G709	Function Selector (Rotary Type)

AMP PARTS LIST AND DESCRIPTIONS

TUBES

• GENERAL ELECTRIC • RAYTHEON • SYLVANIA •					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V8	Channel A AF Amp. - Channel B AF Amp.	12AX7	V9 V10	Channel A Output Channel B Output	50C5 50C5

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA COLUMBIA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C34A	40	150	11G760	PRS3625	BBRQ44315C	WQ230	CDB-Q-1001	TVA-3448	
B	30	150		PRSI440				TVA-1410	
C	20	150							
D	20	25							
C35	10	50		PRSI320	BBR10-50	TC32	ML10-15	TVA-1304	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C36	470	10%		DI-470	DD-471	5R5T47	CCD-471	GP347	10TS-T47
C37	10000			BPD-01	DD-103	BYA10SI	CCD-103	B-110	5HK-S10
C38	270	10%		DI-270	DD-271	L10T27	CCD-271	GP327	10TS-T27
C39	10000			BPD-01	DD-103	BYA10SI	CCD-103	B-110	5HK-S10
C40	470	10%		DI-470	DD-471	5R5T47	CCD-471	GP347	10TS-T47
C41	10000			BPD-01	DD-103	BYA10SI	CCD-103	B-110	5HK-S10
C42	270	10%		DI-270	DD-271	L10T27	CCD-271	GP327	10TS-T27
C43	10000			BPD-01	DD-103	BYA10SI	CCD-103	B-110	5HK-S10
C44	.5	50V		P288N-5		CUB2P5	2DP-5-504	GEM-205	2TM-P5
C45	.5	50V		P288N-5		CUB2P5	2DP-5-504	GEM-205	2TM-P5
C46	.05	600V		P688N-05	DD-503	CUB6S5	6DP-3-503	GEM-615	6TM-S5

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA COLUMBIA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R33A	3meg	½	9G642	B-85	A47-3meg-S	QI3-140	U57	Loudness, Channel A
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R34A	3meg	½	9G642	B-85	A47-3meg-S	QI3-140	U57	Loudness, Channel B
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R35A	500K	½	9G644	B-59	AD47-500K-S		FA55L	Treble, Channel A
B	500K	½		SR-59	Not Req.		RU55L	Treble, Channel B
C	Shaft			Not Req.	KSS-3		CS3500	
R36A	3meg	½	9G645	B-84			FA36L	Bass, Channel A
B	3meg	½		SR-84			RU36L	Bass, Channel B
C	Shaft			Not Req.			CS3500	

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R37	100K	
R38	6.8meg	
R39	100K	
R40	270K	
R41	27K	
R42	470K	

ITEM No.	RATING	REMARKS
R43	100Ω 1W	
R44	100K	
R45	6.8meg	
R46	100K	
R47	270K	
R48	470K	

ITEM No.	RATING	REMARKS
R49	2200Ω	
R50	100Ω 1W	
R51	47Ω 2W	
R52	47Ω 2W	
R53	47K	

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA COLUMBIA PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	117V	117V ② .3A		2G120			P-6410 ①	23V17		

① Drill new mounting hole.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA COLUMBIA PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T3	2900Ω CT	3-4Ω CT	3G253						
T4	2000Ω	3-4Ω	3G254	A-2928①	AU-607①	A-3876 ①	24S63 ①	S-1X ①	① Drill new mounting hole.

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA COLUMBIA PART No.	QUAM PART No.	NOTES
SP1	6"	PM	3-4Ω	1G160	6A31	
SP2	4"	PM	3-4Ω	1G159	4A1	
SP3	6"	PM	3-4Ω	1G160	6A31	
SP4	4"	PM	3-4Ω	1G159	4A1	

RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA COLUMBIA PART No.	ITT PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M4	070A	10G616 *	1235AH *	1N1764 ♦	100A *	SR200 ♦	* Selenium ♦ Silicon

PHONO CARTRIDGE

ITEM No.	COLUMBIA PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE	JENSEN PART No. CARTRIDGE	JENSEN PART No. NEEDLE	SONOTONE PART No. CARTRIDGE	SONOTONE PART No. NEEDLE
M5		13TB		26S	S1-1 S3-3			8TA4-S	N-8TA-S

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA COLUMBIA PART No.	CLEVITE WALCO PART No.	JENSEN PART No.	REMARKS
M6		W-110STS † or W-110STD ♦	CS-1X † or CS-1XD ♦	† Jewel ♦ Diamond

MISCELLANEOUS

ITEM No.	PART NAME	COLUMBIA PART No.	NOTES
M7	Switch	19G707	Function (Rotary Type)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	8G522	Loudness, Bass, Treble, Selector, Tuning, Radio Function
Cabinet	17G878	Mahogany, Model C-1150M
Cabinet	17G879	Walnut, Model C-1150W
Cabinet	17G883	Speaker, Mahogany, Model C-1150M
Cabinet	17G884	Speaker, Walnut, Model C-1150W
Cabinet	17G885	Speaker, Blonde

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
Use BELDEN No. 8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1785-B (6 Ft. Length)
1725-K (7½ Ft. Length)

Low-Loss Shielded Lead (Interconnecting) .....Use BELDEN No. 8401

Phono Pick-up Arm Cable ..... Use BELDEN No. 8430 (Two Conductor - Twisted)

PHOTOFACT® Folder with CIRCUITRACE®

EMERSON MODELS 888 ATLAS, EXPLORER, VANGUARD, 988 RAMBLER (Ch. 120485)

EMERSON MODELS 888 ATLAS, EXPLORER, VANGUARD, 988 RAMBLER (Ch. 120485)

MODEL 888 ATLAS

EMERSON MODELS 888 ATLAS, EXPLORER, VANGUARD, 988 RAMBLER (Ch. 120485)

TRADE NAME	Emerson Model 888 Atlas, Explorer, Vanguard , 988 Rambler (Ch. 120485)
MANUFACTURER	Emerson Radio & Phono Corp., 524 W. 23rd Street, New York 11, N. Y.
TYPE SET	Battery Operated Transistorized Portable AM Receiver
POWER SUPPLY	6 Volts DC RATING 9 MA@6 Volts DC (No Signal, Min. Volume)
TUNING RANGE—BROADCAST	535 — 1640KC 25 MA@6 Volts DC (Signal, Normal Volume)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested alignment tools:
A1, A2, A3. . .....GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989
WALSCO #2515, 2531, 2532
A4, A5.....GENERAL CEMENT #5004, 5009, 8195, 8274, 8275, 8607, 8728, 8987, 8988, 8989, 9291
WALSCO #2515, 2520, 2522, 2523, 2531, 2532, 2534, 2537, 2538
A6.....GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to antenna stator lug of tuning gang (front section). Low side to chassis.	455KC (400% Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3	Adjust for maximum output.
2.	Loop	1640KC	"	"	A4	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.	"	1400KC	Tune to 1400KC Signal.	"	A5	"
4.	"	600KC	600KC	"	A6	Adjust for maximum output while rocking tuning gang. Repeat Steps 2 and 4.

DISASSEMBLY INSTRUCTIONS

ATLAS, VANGUARD

1. Remove 2 screws from cabinet back. Remove back.
2. Remove tuning knob screw. Remove knob.
3. Remove volume control knob (Pull off).
4. Remove 2 printed board mounting screws and 2 fiber spacers used as guides.
5. Remove hex nut holding printed board.
6. Remove battery holder assembly.
7. Remove printed board.

EXPLORER

1. Perform steps 1, 3, 4 and 6 of Atlas, Vanguard Models.
2. Locate 2 Phillips head mounting screws at top corner and left center of cabinet. Loosen top screw and remove left screw.
3. Slide chassis toward cabinet bottom and remove.

MODEL 988 RAMBLER

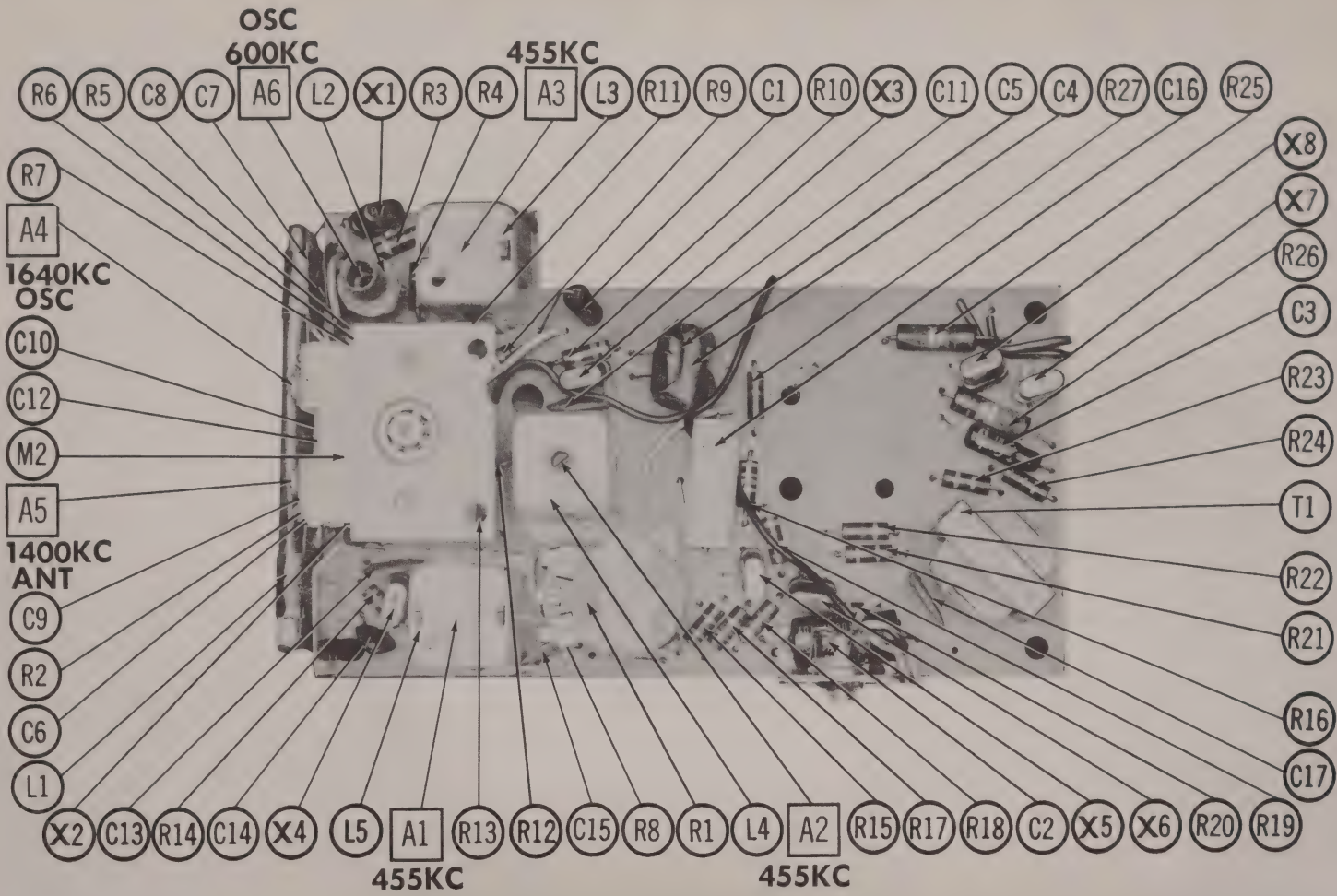
1. Perform Steps 1, 3, 4 and 6 of Atlas, Vanguard Models, and Steps 2 and 3 of Explorer Model.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

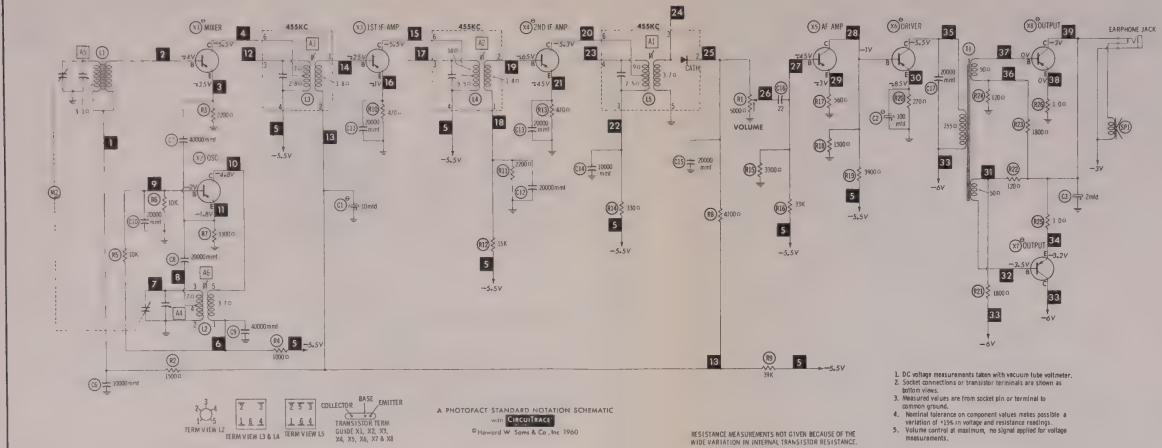
The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1960 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

JF971

SET 502 FOLDER 8



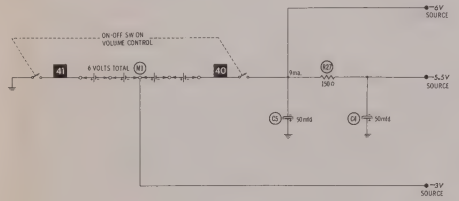
CHASSIS TOP VIEW



1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections or transistor terminals are shown as bottom views.
3. Measured values are from socket pin or terminal to common ground.
4. Nominal tolerance on component values makes possible a variation of ±5% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

A Howard W. Sams CIRCUITRACE Photo

PRINTED BOARD



⊘ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

EMERSON MODELS 888 ATLAS, EXPLORER, VANGUARD, 988 RAMBLER (Ch. 120485)

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	E051A *	Mixer			2N485		PNP
X2	E052	Oscillator			2N485		PNP
X3	E053	1st IF Amplifier			2N483		PNP
X4	E054B *	2nd IF Amplifier			2N483		PNP
X5	E055	AF Amplifier		2N406	2N363		PNP
X6	E056 †	Driver		2N406	2N363		PNP
X7	E057 †	Output		2N408	2N633		PNP } Matched
X8	E057 †	Output		2N408	2N633		PNP } Pair

* If X1 has suffix letter "H", X4 should have "A".

† When replacing transistors, observe color coding: X6, X7, X8 yellow dot; X6 green dot with X7 & X8 orange dot; X6 blue dot and X7 & X8 red dot; X6 violet dot and X7 & X8 brown dot.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	EMERSON PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	10	10		XPP-10010	NLW10-15	TT12X10	ML10-15	TE-1114	Note 1
C2	100	10		PWE10100	NLW100-12	TT15X100	ML100-15	TE-1119.3	Note 2
C3	2	6	925487	XPP-6002	NLW2-50	TT6X2	ML2-6	TE-1081	
C4	50	10	925471	XPP-10050	NLW50-10	TT10X50	ML50-15	TE-1119	
C5	50	10		XPP-10050	NLW50-10	TT10X50	ML50-15	TE-1119	

Note 1. Some versions may use 3 volt unit in this application (Part #925486).
Note 2. Some versions may use 3 volt unit in this application (Part #925472).

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C6	10000		C80V103AM	DDM-103	H-05S2		TA-110	TG-S10
C7	40000	#928983						
C8	20000		C80V203AM	DDM-203	H-05S2		TA-120	TG-S20
C9	40000	#928983						
C10	20000		C80V203AM	DDM-203	H-05S2	CCD-203	TA-120	TG-S20
C11	20000		C80V203AM	DDM-203	H-05S2	CCD-203	TA-120	TG-S20
C12	20000		C80V203AM	DDM-203	H-05S2	CCD-203	TA-120	TG-S20
C13	20000		C80V203AM	DDM-203	H-05S2	CCD-203	TA-120	TG-S20

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C14	10000		C80V103AM	DDM-103	H-05S1	CCD-103	TA-110	TG-S10
C15	20000		C80V203AM	DDM-203	H-05S2	CCD-203	TA-120	TG-S20
C16	.22 50V		V84C2P22			IDP-3-224	GEM-2022	2TM-P22
C17	20000		C80V203AM	DDM-203	H-05S2	CCD-203	TA-120	TG-S20

Emerson Part Number.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	EMERSON PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	5000Ω	½	390592					Volume & Switch

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	1500Ω	
R3	2200Ω	
R4	1000Ω	
R5	10K	
R6	10K	
R7	3300Ω	
R8	4700Ω	
R9	39K	
R10	470Ω	

ITEM No.	RATING	REMARKS
R11	2200Ω	
R12	15K	
R13	470Ω	
R14	330Ω	
R15	3300Ω	
R16	33K	
R17	560Ω	
R18	1500Ω	
R19	3900Ω	

ITEM No.	RATING	REMARKS
R20	270Ω	
R21	1800Ω	
R22	120Ω	
R23	1800Ω	
R24	120Ω	
R25	1.0Ω	
R26	1.0Ω	
R27	150Ω	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		EMERSON PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loopstick	700152				
L2	Osc. Coil	716131				
L3	1st IF Trans.	720358				
L4	2nd IF Trans.	720348				
L5	3rd IF Trans.	720349				

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	EMERSON PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	.55	1 SEC. 2 1	734183					

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	EMERSON PART No.	QUAM PART No.	
SP1	3½"	PM	20-22Ω	180211		

BATTERIES

ITEM No.	VOLTAGE	EMERSON	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
		PART No.	"A"	"B"	"A"	"B"	"A"	"B"	
M1	1.5V	*		930 *		1015 *		M-13R *	* 4 Required

MISCELLANEOUS

ITEM No.	PART NAME	EMERSON PART No.	NOTES
M2	Tuning Cap Printed Board	900191 630243	2 Gang

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	461100	Disc Pointer & Tuning, Model Explorer
Knob	461100A	Disc Pointer & Tuning, Model 988 Rambler
Knob	460916	Tuning, Model Atlas
Knob	461006	Tuning, Model Vanguard
Knob	460917	Volume, Model Atlas
Knob	461000	Volume, Models Explorer & Vanguard
Knob	461340	Volume, Model 988 Rambler
Cabinet Body	141038	White, Model Atlas
Cabinet Body	141005	White, Model Explorer
Cabinet Body	140922	White, Model Vanguard
Cabinet Body	141144	White, Model 988 Rambler
Cabinet Body	141005A	Green, Model Explorer
Cabinet Body	140922A	Green, Model Vanguard
Cabinet Body	141144A	Green, Model 988 Rambler
Cabinet Body	141038A	Ebony, Model Atlas
Cabinet Body	141005B	Ebony, Model Explorer
Cabinet Body	140922B	Ebony, Model Vanguard
Cabinet Body	141144B	Ebony, Model 988 Rambler
Cabinet Body	141005C	Red, Model Explorer
Cabinet Body	140922C	Red, Model Vanguard
Cabinet Body	141144C	Red, Model 988 Rambler
Cabinet Body	141005D	Turquoise, Model Explorer
Cabinet Body	140922D	Turquoise, Model Vanguard
Cabinet Body	141144D	Turquoise, Model 988 Rambler
Cabinet Body	141005E	Grey, Model Explorer

CABINETS & CABINET PARTS (cont)

NAME	PART NO.	DESCRIPTION
Cabinet Body	140922E	Grey, Model Vanguard
Cabinet Body	141144E	Grey, Model 988 Rambler
Cabinet Back	141039	White, Model Atlas
Cabinet Back	141000	White, Model Explorer
Cabinet Back	140926	White, Model Vanguard
Cabinet Back	141150	White, Model 988 Rambler
Cabinet Back	141000A	Green, Model Explorer
Cabinet Back	140926A	Green, Model Vanguard
Cabinet Back	141150A	Green, Model 988 Rambler
Cabinet Back	141039A	Ebony, Model Atlas
Cabinet Back	141000B	Ebony, Model Explorer
Cabinet Back	140926B	Ebony, Model Vanguard
Cabinet Back	141150B	Ebony, Model 988 Rambler
Cabinet Back	141000C	Red, Model Explorer
Cabinet Back	140926C	Red, Model Vanguard
Cabinet Back	141150C	Red, Model 988 Rambler
Cabinet Back	141000D	Turquoise, Model Explorer
Cabinet Back	140926D	Turquoise, Model Vanguard
Cabinet Back	141150D	Turquoise, Model 988 Rambler
Cabinet Back	141000E	Grey, Model Explorer
Cabinet Back	140926E	Grey, Model Vanguard
Cabinet Back	141150E	Grey, Model 988 Rambler
Handle	412964A	
Dial Crystal	520297	Model 988 Rambler
Dial Crystal	520273F	White, Model Explorer
Dial Crystal	520273A	Green, Model Explorer
Dial Crystal	520273B	Ebony, Model Explorer
Dial Crystal	520273C	Red, Model Explorer
Dial Crystal	520273D	Turquoise, Model Explorer
Dial Crystal	520273E	Grey, Model Explorer

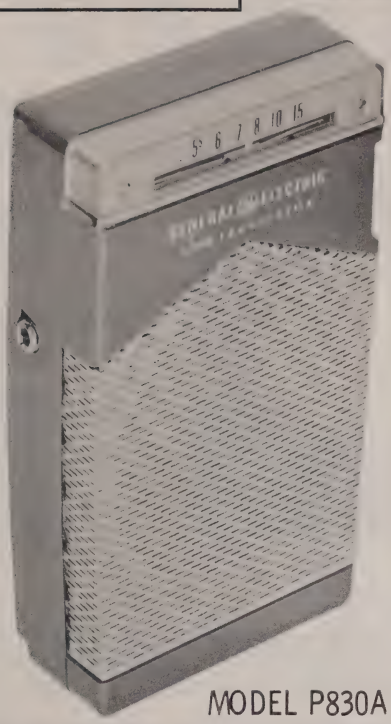
WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

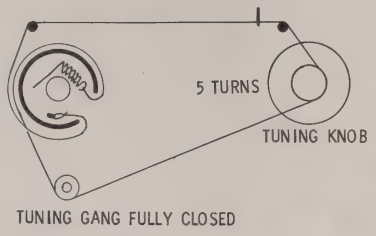
PHOTOFACT® Folder with CIRCUITRACE®

GENERAL ELECTRIC MODELS P830A, P831A

GENERAL ELECTRIC
MODELS P830A, P831A



DIAL CORD STRINGING



FRONT VIEW

MODEL P830A

TRADE NAME	General Electric Models P830A, P831A
MANUFACTURER	General Electric Co., Product Service, Radio Receiver Dept., 869 Broad Street, Utica, N. Y.
TYPE SET	Battery Operated Transistorized Portable AM Receiver
POWER SUPPLY	9 Volts DC
RATING	7 MA @ 9 Volts DC (No Signal, Min. Volume)
TUNING RANGE—BROADCAST	535 – 1630KC
	12 MA @ 9 Volts DC (Signal, Normal Volume)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:
A1, A2, A3... GENERAL CEMENT #8607, 9291, 9294
WALSCO #2520, 2522, 2523, 2524, 2534, 2537
A5..... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989
WALSCO #2515, 2531, 2532
A4, A6..... GENERAL CEMENT #5000, 5003, 5066, 8276, 8290, 9087, 9089
WALSCO #2512, 2525, 2528

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	Loop	455KC (400~ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2.	"	1630KC	"	"	A4	"
3.	"	580KC	580KC Signal.	"	A5	Adjust for maximum output while rocking tuning gang.
4.	"	1400KC	1400KC Signal.	"	A6	"

DISASSEMBLY

1. Remove cabinet back.
2. Remove screw near volume control.
3. Slide chassis toward cabinet bottom and remove from cabinet.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of JF985

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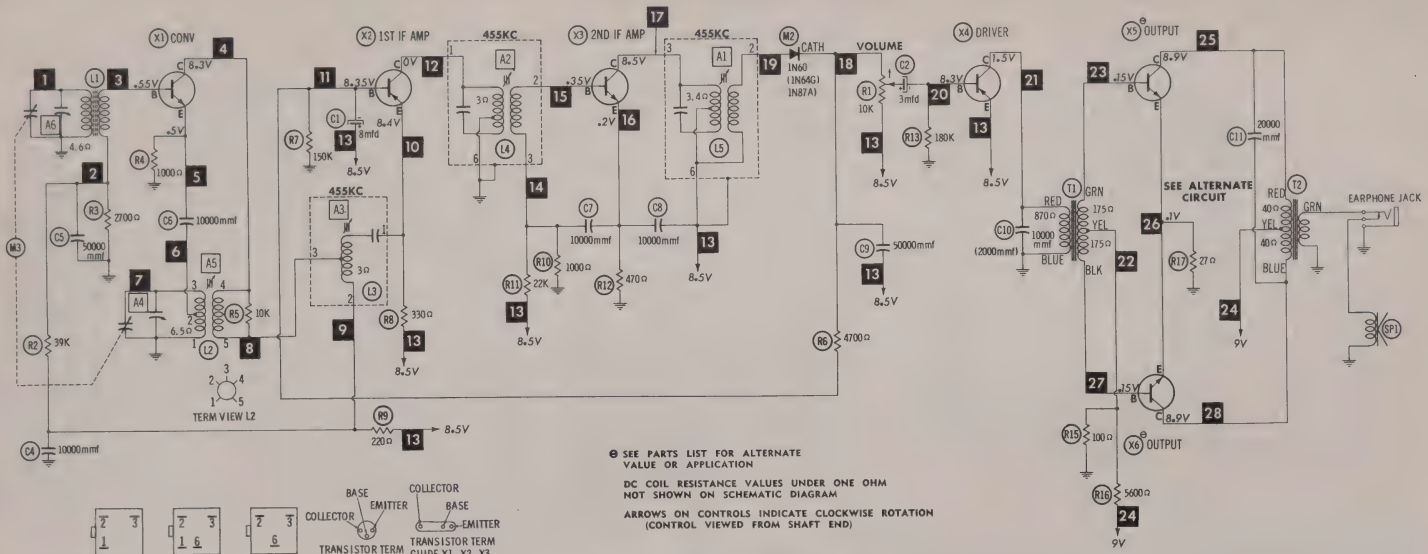
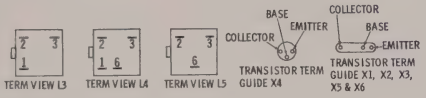
SET 502 FOLDER 9



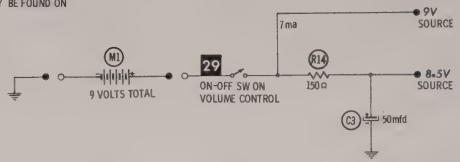


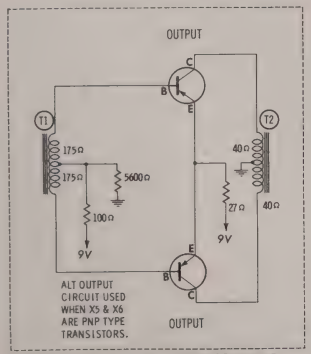
⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.





RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections or transistor terminals are shown as bottom views.
3. Measured values are from socket pin or terminal to common ground.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE®

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GENERAL ELECTRIC
MODELS P830A, P831A

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	MFGR. PART NO.	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	RS-1531	Converter	2N377		2N1366	2N1058	NPN
X2	RS-1550	1st IF Trans.			2N483	SYL1608	PNP
X3	RS-1536	2nd IF Trans.			2N1367		NPN
X4	RS-1543	Driver		2N406	2N362	2N406	PNP
X5	RS-1549 *	Output	2N444	2N408	2N632	2N1054	NPN } Matched
X6	RS-1549 *	Output	2N444	2N408	2N632	2N1054	NPN } Pair

* For PNP Type, Order Part #RS-1548.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	G.E. PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	8	12	RS-2285		NLW8-25				
C2	3	12	RS-2284	XPP-12003	NLW3-25	TT12X3	ML4-15	TE-1122	
C3	50	12	RS-2286						

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C4	10000		C80V103AM	DDM-103	H-05S1		TA-110	TG-S10
C5	50000		C80V503AM	DDA-503	H-05S5		TA-150	TG-S50
C6	10000		C80V103AM	DDM-103	H-05S1		TA-110	TG-S10
C7	10000		C80V103AM	DDM-103	H-05S1		TA-110	TG-S10
C8	10000		C80V103AM	DDM-103	H-05S1		TA-110	TG-S10
C9	50000		C80V503AM	DDA-503	H-05S5		TA-150	TG-S50
C10	10000	(2000) †	C80V103AM	DDM-103	H-05S1		TA-110	TG-S10
C11	20000		C80V203AM	DDM-203	H-05S2		TA-120	TG-S20

† Alternate Value.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	G.E. PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	10K	1/4	RS-2280					Volume & Switch

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	39K	
R3	2700Ω	
R4	1000Ω	
R5	10K	
R6	4700Ω	
R7	150K	

ITEM No.	RATING	REMARKS
R8	330Ω	
R9	220Ω	
R10	1000Ω	
R11	22K	
R12	470Ω	
R13	180K	

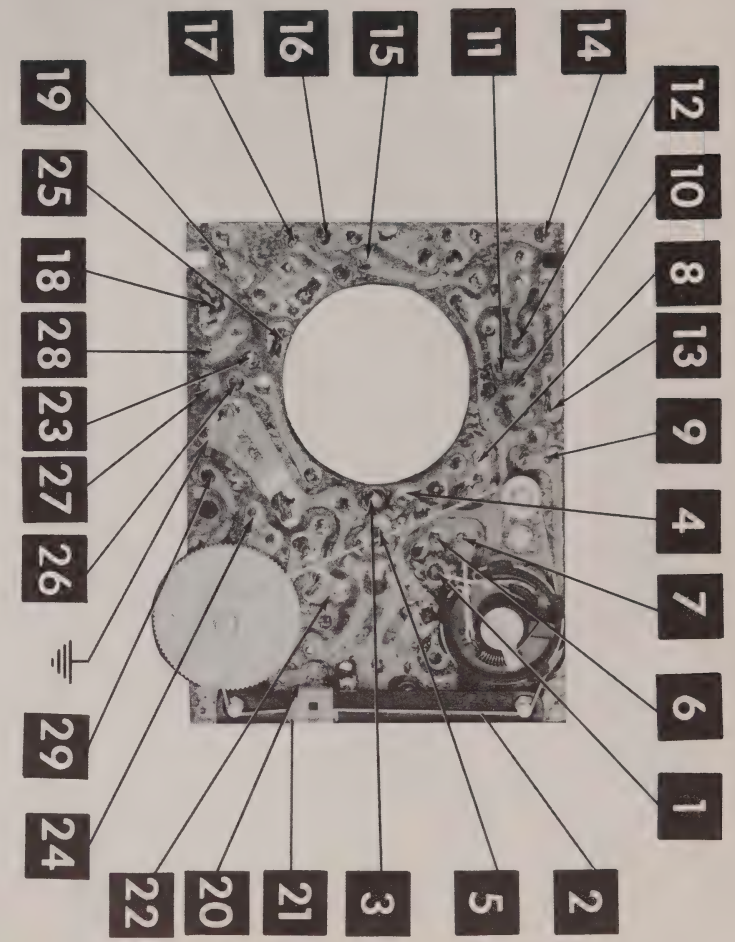
ITEM No.	RATING	REMARKS
R14	150Ω	
R15	100Ω	
R16	5600Ω	
R17	27Ω	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		G.E. PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loopstick	RS-2281				
L2	Osc. Coil	RS-2277				
L3	1st IF Trans.	RS-2274				
L4	2nd IF Trans.	RS-2275				
L5	3rd IF Trans.	RS-2276				

PRINTED BOARD

A Howard W. Sams CIRCUITRACE® Photo



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	G. E. PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1, 2	1	RS-2273					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	G. E. PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	800Ω CT	6-8Ω	RS-2272						

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	G. E. PART No.	QUAM PART No.	
SP1	2½"	PM	6-8Ω	RB-1133		

BATTERIES

ITEM No.	VOLTAGE	G. E. PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	9V			226		P-6		M-1600	

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		G. E. PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2	1N60 *	RS-1811	1N60	1N60	1N60	Detector (Pigtail)

* Alternate Types 1N64G, 1N87A.

MISCELLANEOUS

ITEM No.	PART NAME	G. E. PART No.	NOTES
M3	Tuning Cap.	RS-2279	2 Gang.

CABINETS & CABINET PARTS

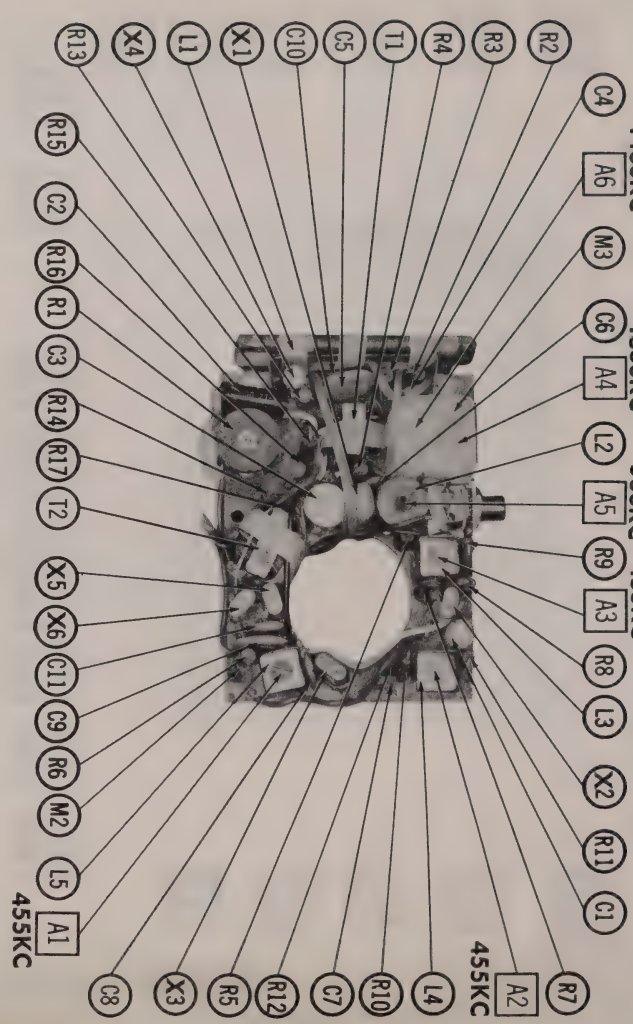
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	RS-2260	Tuning
Knob	RS-2261	Volume
Pointer	RS-2265	
Dial Crystal	RS-2322	
Cabinet Front	RB-1129	Charcoal, P830A
Cabinet Front	RB-1130	Blue, P831A
Cabinet Back	RS-1131	Charcoal, P830A
Cabinet Back	RS-1132	Blue, P831A

WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

CHASSIS—TOP VIEW



PHOTOFACT® Folder

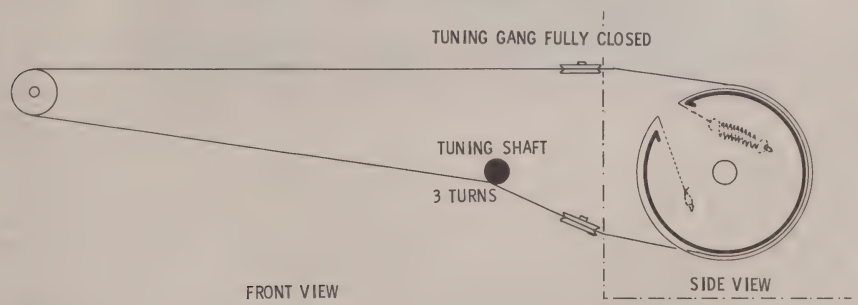
GROMMES
MODEL 120-GAT

GROMMES
MODEL 120-GAT

GROMMES
MODEL 120-GAT

TRADE NAME	Grommes Model 120-GAT		
MANUFACTURER	Precision Electronics, Inc., 9101 King Ave., Franklin Park, Illinois		
TYPE SET	AC Operated 14 Tube FM-AM Receiver		
POWER SUPPLY	110-120 Volts AC, 60 Cycles	RATING	100 Watts, .88 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	535 — 1620KC	FREQ. MOD.	88 — 108MC

DIAL CORD STRINGING



HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of JK963

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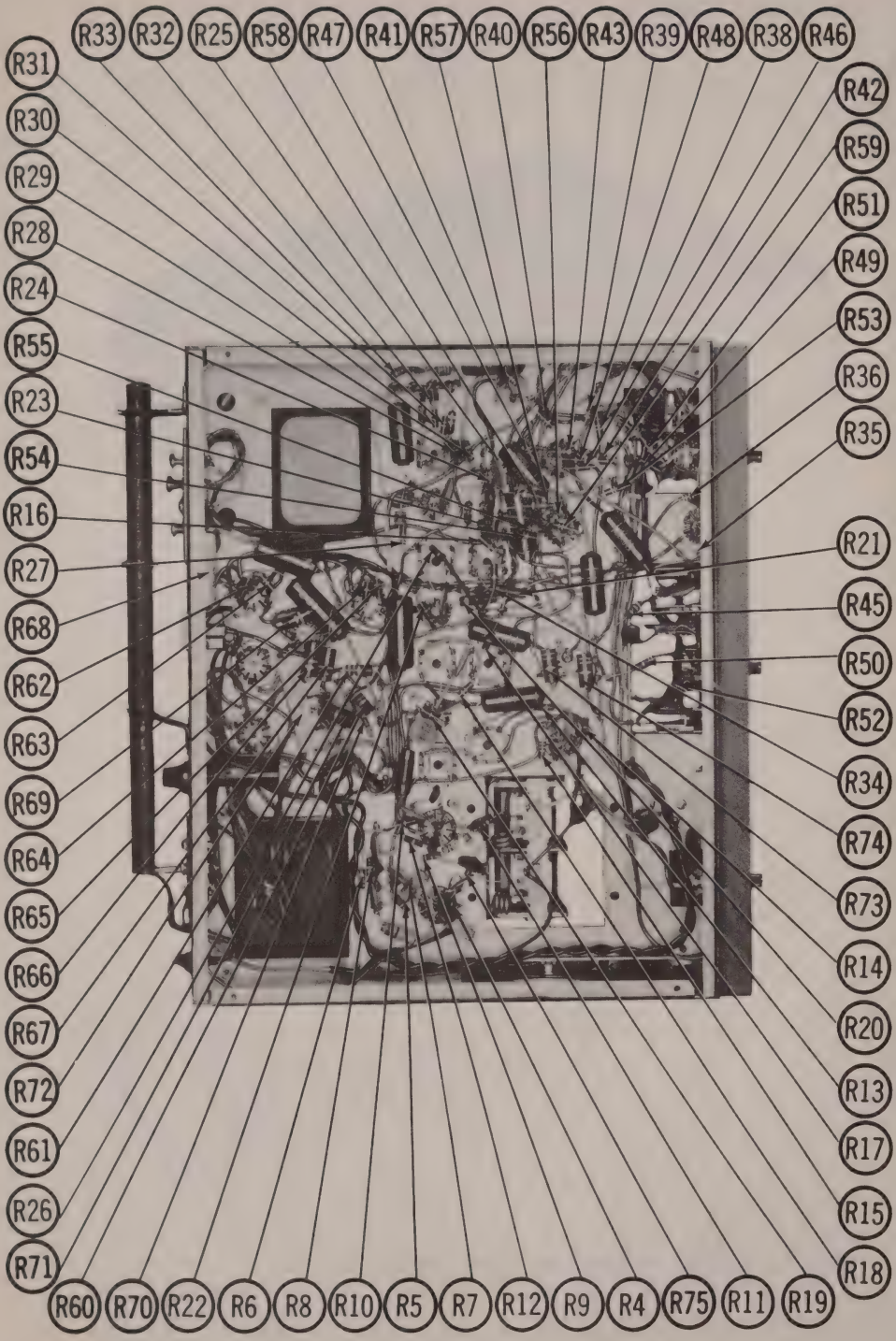
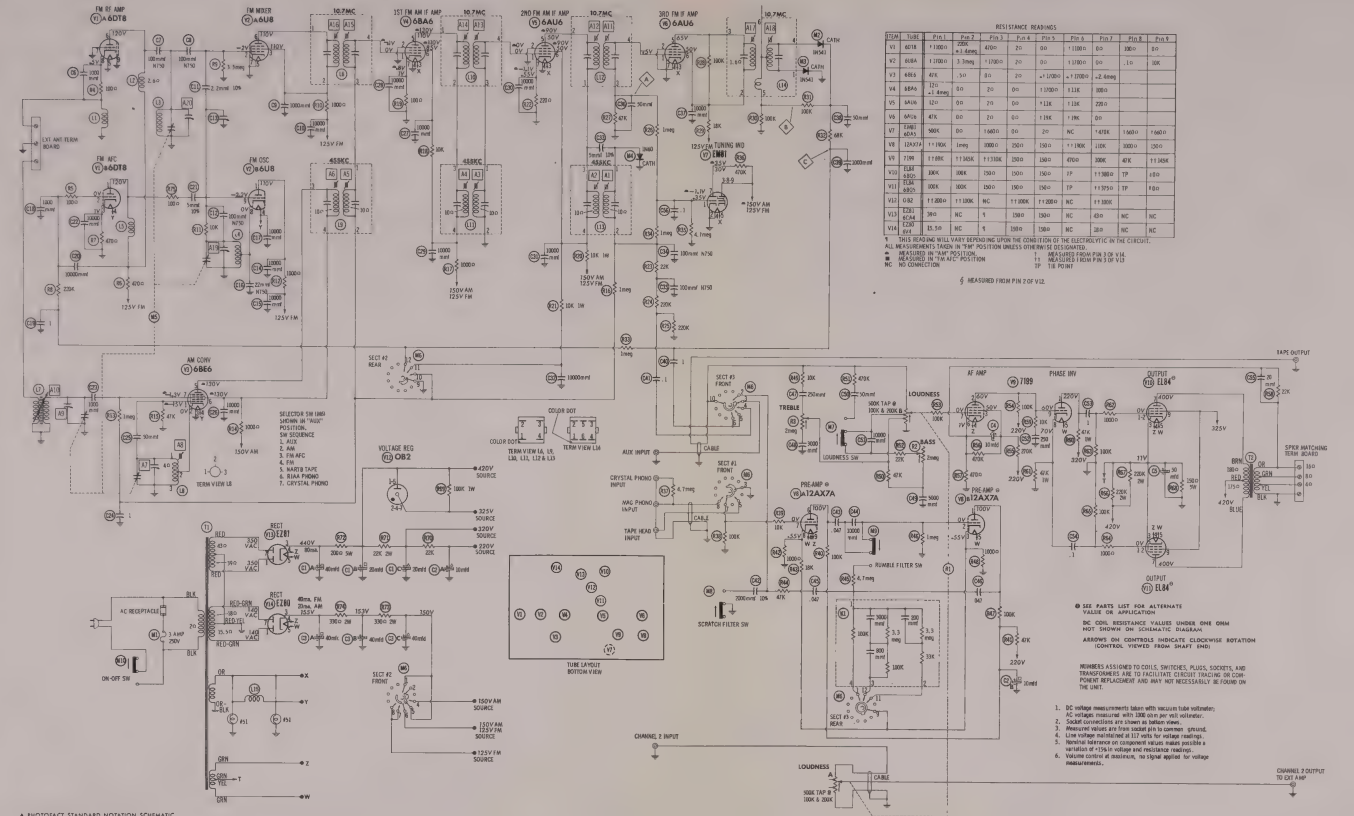
SET 502 FOLDER 10



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6DT8	†100Ω	200K ±1.6meg	470Ω	2Ω	0Ω	†100Ω	0Ω	100Ω	8Ω
V2	6U8A	†270Ω	3.3meg	†270Ω	2Ω	0Ω	†100Ω	0Ω	1Ω	10K
V3	6BE6	47K	3Ω	8Ω	2Ω	↵†270Ω	↵†270Ω	↵2.6meg		
V4	6BA6	120 ±1.4meg	0Ω	2Ω	0Ω	†270Ω	†12K	185Ω		
V5	6AU6	12Ω	0Ω	2Ω	0Ω	†12K	†12K	220Ω		
V6	6DT8	47K	0Ω	2Ω	0Ω	†15K	†19K	0Ω		
V7	6U8A† 6DA5	560K	0Ω	†680Ω	0Ω	2Ω	NC	†470K	†680Ω	†680Ω
V8	12AX7A	†190K	1meg	3000Ω	250Ω	150Ω	††190K	110K	3000Ω	250Ω
V9	7199	†68K	††345K	††330K	250Ω	150Ω	470Ω	330K	47K	††345K
V10	EL84 6BQ5	100K	100K	250Ω	250Ω	150Ω	TP	††385Ω	TP	68Ω
V11	EL84 6BQ5	100K	100K	250Ω	250Ω	150Ω	TP	††375Ω	TP	90Ω
V12	0B2	††200Ω	††100K	NC	††200K	††200Ω	NC	††100K		
V13	1Z2B1 6CA4	3Ω	NC	¶	150Ω	150Ω	NC	43Ω	NC	NC
V14	1Z2B1 6CA4	15.5Ω	NC	¶	150Ω	150Ω	NC	18Ω	NC	NC

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED.
† MEASURED IN "AM" POSITION.
†† MEASURED FROM PIN 3 OF V14.
‡ MEASURED IN "FM AFC" POSITION
‡‡ MEASURED FROM PIN 3 OF V13
NC NO CONNECTION
TP TIE POINT
§ MEASURED FROM PIN 2 OF V12.

⊕ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM.

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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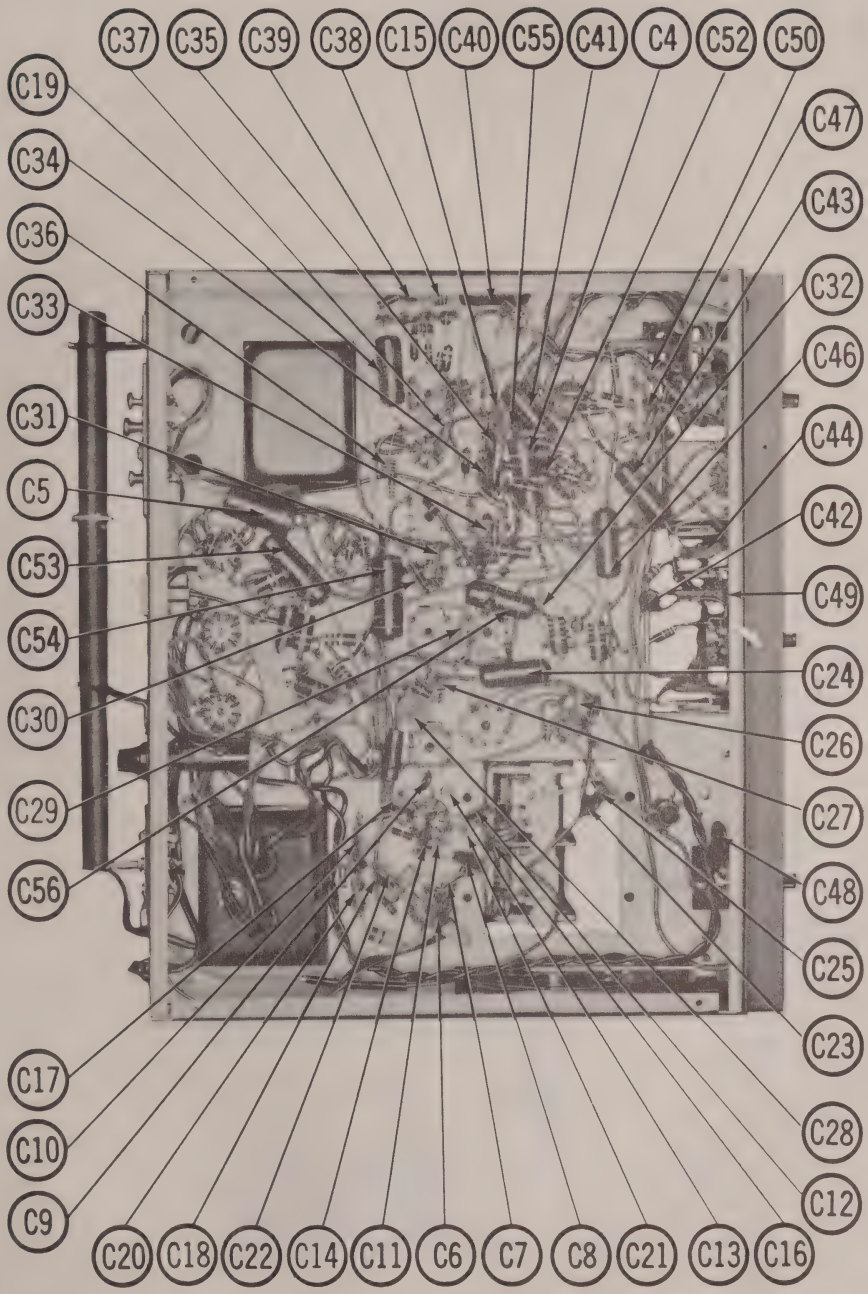
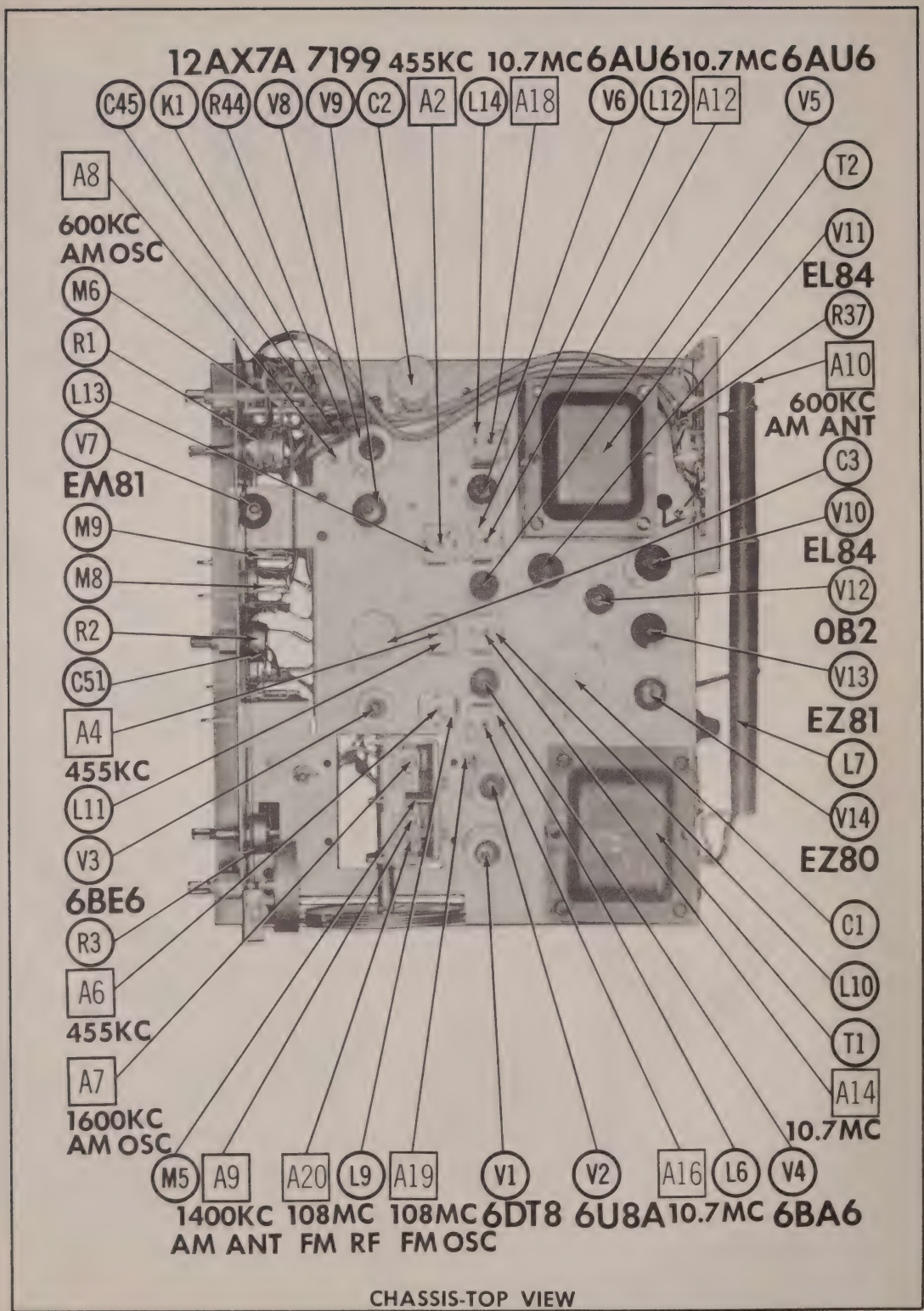
GRUMMES
MODEL 120-GAT



CHASSIS-BOTTOM VIEW-CAPACITOR IDENTIFICATION



CHASSIS-TOP VIEW

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Loudness control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools

A1 thru A6.....	GENERAL CEMENT #5097, 8727 WALSCO #2515
A7, A9, A20....	GENERAL CEMENT #5004, 5008, 5009 WALSCO #2520
A8, A19.....	GENERAL CEMENT #8721, 8722 WALSCO #2519
All thru A18.....	GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440 WALSCO #2526, 2543, 2544, 2545

AM ALIGNMENT—SELECTOR IN AM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .01mfd to pin 7 (grid) of AM Converter. Low side to chassis.	455KC (400∿ Mod.)	(AM) Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4, A5, A6	Adjust for maximum output.
2.	High side thru .01mfd to AM antenna terminal. Low side to chassis.	1600KC	1600KC	"	A7	"
3.	"	600KC	Tune to 600KC Signal.	"	A8	Adjust for maximum output while rocking tuning gang. Repeat Steps 2 and 3.
4.	"	1400KC	Tune to 1400KC Signal.	"	A9	"
5.	"	600KC	Tune to 600KC Signal.	"	A10	"

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM—SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
6.	High side thru 200mmf to pin 2 (grid) of FM Mixer. Low side to chassis.	10.7MC (Unmod.)	(FM) Point of non-interference.	DC probe to point (A). Common to chassis.	A11, A12, A13, A14, A15, A16	Adjust for maximum deflection.
7.	"	"	"	DC probe thru 1meg to point (B). Common to chassis.	A17	"
8.	"	"	"	DC probe to point (C). Common to chassis.	A18	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE—SELECTOR IN FM POSITION

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
6.	High side thru 200mmf to pin 2 (grid) of FM Mixer. Low side to chassis.	10.7MC (450KC Swp)	(FM) Point of non-interference.	Vert. amp. to point (A). Low side to chassis.	A11, A12, A13, A14, A15, A16	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown.
7.	"	"	"	Vert. amp. thru 47K to point (B). Low side to chassis.	A17	"
8.	"	"	"	Vert. amp. to point (C). Low side to chassis.	A18	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A17 for maximum amplitude and straightness of cross-over lines.

FM RF ALIGNMENT—SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
9.	High side thru 270Ω to FM antenna terminals. Low side to chassis.	108MC (Unmod.)	(FM) 108MC	DC probe to point (A). Common to chassis.	A19, A20	Adjust for maximum deflection.

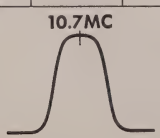


FIG. 1

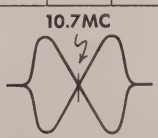
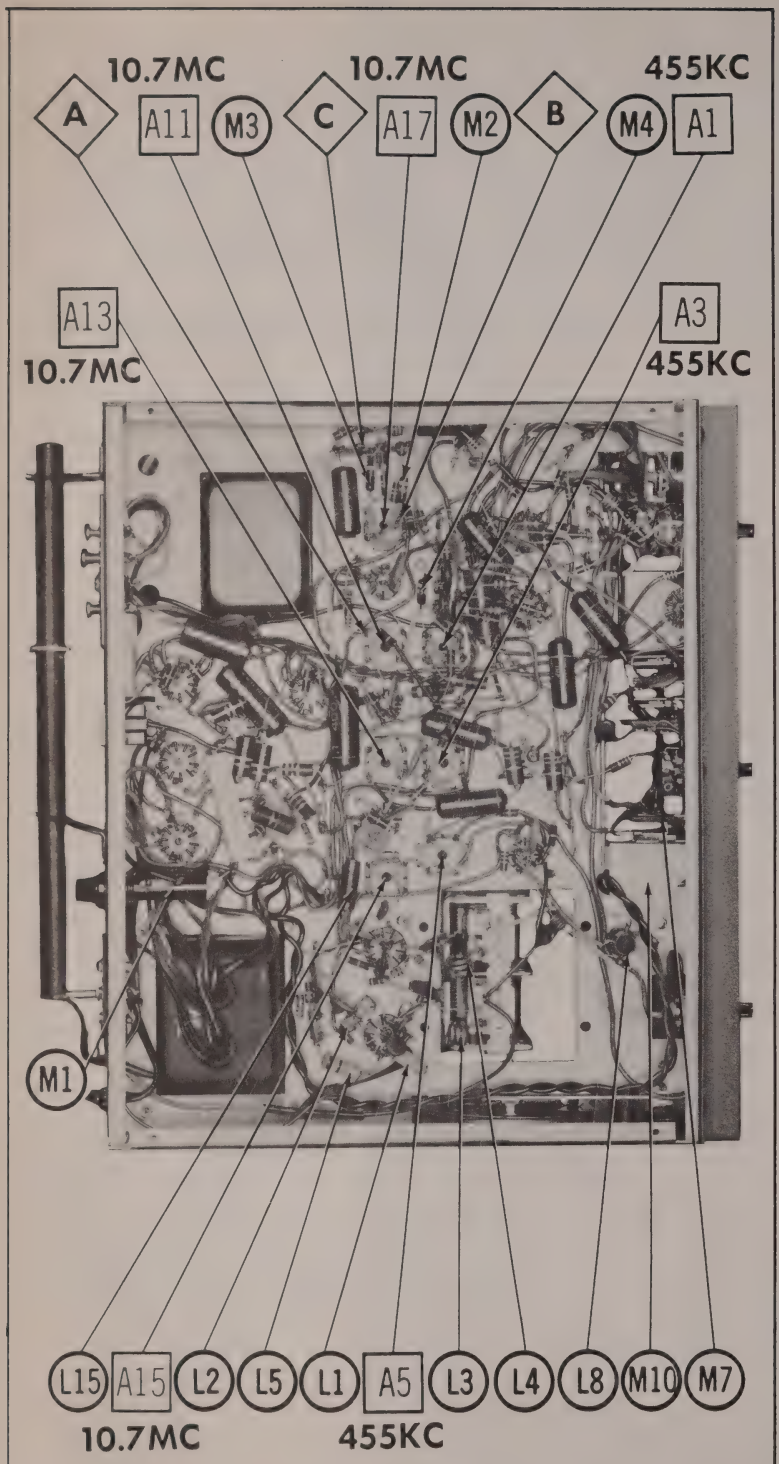


FIG. 2



CHASSIS — BOTTOM VIEW
ALIGNMENT, INDUCTOR & MISC. IDENT.

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆)
V1	FM RF Amp-FM AFC	6DT8
V2	FM Mixer- Osc.	6U8A
V3	AM Converter	6BE6
V4	1st FM-AM IF Amplifier	6BA6
V5	2nd FM-AM IF Amplifier	6AU6
V6	3rd FM IF Amplifier	6AU6
V7	Tuning Indicator	EM81/6DA5
V8	Preamplifier	12AX7A (7025) *
V9	AF Amp. -Phase Inverter	7199
V10	Output	EL84/6BQ5 (7189) *
V11	Output	EL84/6BQ5 (7189) *
V12	Voltage Regulator	OB2
V13	Rectifier	EZ81/6CA4
V14	Rectifier	EZ80/6V4

* Alternate

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	GROMMES PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲40	450		AFH3-50-05	C0372	FP396.1	TMT-37	TVL-3815.6	
B	■20	450							
C	▲20	450							
C2A	▲10	350		AFH2-47	B0370	FP231	TMD-47	TVL-2750	
B	■10	350							
C3A	■40	150		AFH3-10	C0090	FP311.5	TMT-9	TVL-3442	
B	40	150							
C	▲40	150							
C4	10	250		PRS1620	BR1045	TC52	TD-10-250	TVA-1504	
C5	50	50		PRS50V50	BR505	TC39	TD-50-50	TVA-1308	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C6	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C7	100 N750		N750-DI 100	DTN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10
C8	100 N750		N750-DI 100	DTN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10
C9	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C10	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C11	2.2 10%		NPO-SI 2.2	TCZ-2R2	C10V22C	CCTO-2R2	CNO-522	10TCC-V22
C12	100 N750		N750-DI 100	DTN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10
C13								
C14	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C15	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C16	22 N750		N750-DI 22	DTN-22	C10Q22U	CCTN-220	CN7-422	10TCU-Q22
C17	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C18	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C19	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P1
C20	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C21	5 10%		NPO-SI 5.0	TCZ-4R7	C10V5C	CCTO-050	CNO-547	10TCC-V50
C22	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C23	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C24	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P1
C25	50		SI 50	D6-500	L10Q50	CCD-500	GP450	10TS-Q50
C26	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C27	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C28	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C29	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C30	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C31	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C32	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C33	5 10%		NPO-SI 5.0	TCZ-4R7	C10V5C	CCTO-050	CNO-547	10TCC-V50
C34	100 N750		N750-DI 100	DTN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10
C35	100 N750		N750-DI 100	DTN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10
C36	50		SI 50	D6-500	L10Q5	CCD-500	GP450	10TS-Q50
C37	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C38	50		SI 50	D6-500	L10Q5	CCD-500	GP450	10TS-Q50
C39	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C40	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P1
C41	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P1
C42	2000 10%		DI-2000		PM6D2	CCD-202	GP220	10TS-D20
C43	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C44	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C45	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C46	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C47	250		DI-250	DD-251	L10T25	CCD-251	GP325	10TS-T25
C48	3000		DI-3000	DD-302	BYA10D3	CCD-302	B-230	5HK-D30
C49	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C50	50		SI 50	D6-500	L10Q5	CCD-500	GP450	10TS-Q50
C51	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C52	250		DI-250	DD-251	L10T25	CCD-251	GP325	10TS-T25
C53	.1 400V		P488N-1	DF-104	CUB4P1	2DP-3-104	GEM-401	4TM-P1
C54	.1 400V		P488N-1	DF-104	CUB4P1	2DP-3-104	GEM-401	4TM-P1
C55	20		SI 20	D6-200	L10Q2	CCD-200	GP420	10TS-Q20
C56	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P1

PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	GROMMES PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	500K *		LCK-500KS	BT-160			FB55DT25	Loudness, Channel 2
B	500K *			STR-160			RU55DT25	Loudness, Channel 1
C	Shaft			Not Req.			CS3500	
R2A	2meg		TCK-2M	B-76	A47-2meg-Z	Q13-139	U55	Bass, Channel 1
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R3A	2meg		TCK-2M	B-76	A47-2meg-Z	Q13-139	U55	Treble, Channel 1
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	

* Taps ⓐ100K & 200K.

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R4	100Ω	
R5	100Ω	
R6	470Ω	
R7	470Ω	
R8	220K	
R9	3.3meg	
R10	1000Ω	
R11	10K	
R12	1000Ω	
R13	1meg	
R14	1000Ω	
R15	47K	
R16	1meg	
R17	1000Ω	
R18	10K	
R19	100Ω	
R20	10K 1W	
R21	10K 1W	
R22	220Ω	
R23	22K	
R24	220K	
R25	220K	
R26	1meg	
R27	47K	

ITEM No.	RATING	REMARKS
R28	100K	
R29	18K	
R30	100K	
R31	100K	
R32	68K	
R33	1meg	
R34	1meg	
R35	4.7meg	
R36	470K	
R37	4.7meg	
R38	100K	
R39	10K	
R40	100K	
R41	47K	
R42	1000Ω	
R43	18K	
R44	47K	
R45	4.7meg	
R46	1meg	
R47	100K	
R48	1000Ω	
R49	10K	
R50	47K	
R51	470K	

ITEM No.	RATING	REMARKS
R52	22K	
R53	100K	
R54	100K	
R55	270K	
R56	470K	
R57	470Ω	
R58	22K	
R59	10K	
R60	47K 1W	
R61	47K 1W	
R62	1000Ω	
R63	100K	
R64	1000Ω	
R65	100K	
R66	220K 2W	
R67	220K 2W	
R68	150Ω 5W	IRC#PW5-150Ω
R69	100K 1W	
R70	22K	
R71	22K 2W	
R72	200Ω 5W	IRC-PW5-200Ω
R73	330Ω 2W	
R74	330Ω 2W	
R75	100Ω	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		GROMMES PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	FM Ant. Coil			4584		.24uh ①
L2	RF Choke		BC-564	4608		3.3uh ①
L3	FM RF Coil					
L4	FM Osc. Coil					1uh ①
L5	RF Choke		BC-561	4602		
L6	1st FM IF Trans.		FM-254	1463		
L7	Loopstick		BC-418	705-A		
L8	AM Osc. Coil		BC-394	70-OSC		
L9	1st AM IF Trans.		BC-352	12-C1	RF-1	
L10	2nd FM IF Trans.		FM-254	1463		
L11	2nd AM IF Trans.		BC-353	12-C2	RF-2	
L12	3rd FM IF Trans.		FM-254	1463		
L13	3rd AM IF Trans.		BC-353	12-C2	RF-2	
L14	Discriminator		FM-255	1465		
L15	Fil. Choke		BC-562	4602		2.6uh

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	PRI.	SEC. 1	SEC. 2	GROMMES PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	117V ⓐ .88A	700 VCT ⓐ .080A	280VCT ⓐ .040A	TP-15						
	SEC. 3	SEC. 4	SEC. 5							
	6.3V ⓐ 2.4A	6.3VCT ⓐ 3.9A								

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	GROMMES PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	7500Ω CT	16Ω Tap ⓐ 8Ω, 4Ω	T0-20C						

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	GROMMES PART No.	REPLACEMENT DATA
K1	Tone Compensation	200mmf, 800mmf, 3000mmf, 33K, 100K, 100K, 3.3meg, 3.3meg	PC1960	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			GROMMES PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG	3A 250V			312003 (3AG 3A 250V)	342001	AGC 3	HKP

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		GROMMES PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2	1N541		1N636	1N295	1N295	FM Det. (Pigtail) } Matched
M3	1N541		1N636	1N295	1N295	FM Det. (Pigtail) } Pair
M4	1N60		1N60	1N60	1N60	AM Det. (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	GROMMES PART No.	NOTES
M5	Tuning Cap		4 Gang (AM Sections: Ant. 27-525mmf, Osc. 28-200mmf)
M6	Switch		Function Selector (Rotary Wafer)
M7	Switch		Loudness (Pushbutton Type)
M8	Switch		Scratch Filter (Pushbutton Type)
M9	Switch		Rumble Filter (Pushbutton Type)
M10	Switch		Power Off-On (Pushbutton Type)

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

PHOTOFACT® Folder

LAFAYETTE
MODEL LA-235

LAFAYETTE
MODEL LA-235

LAFAYETTE
MODEL LA-235

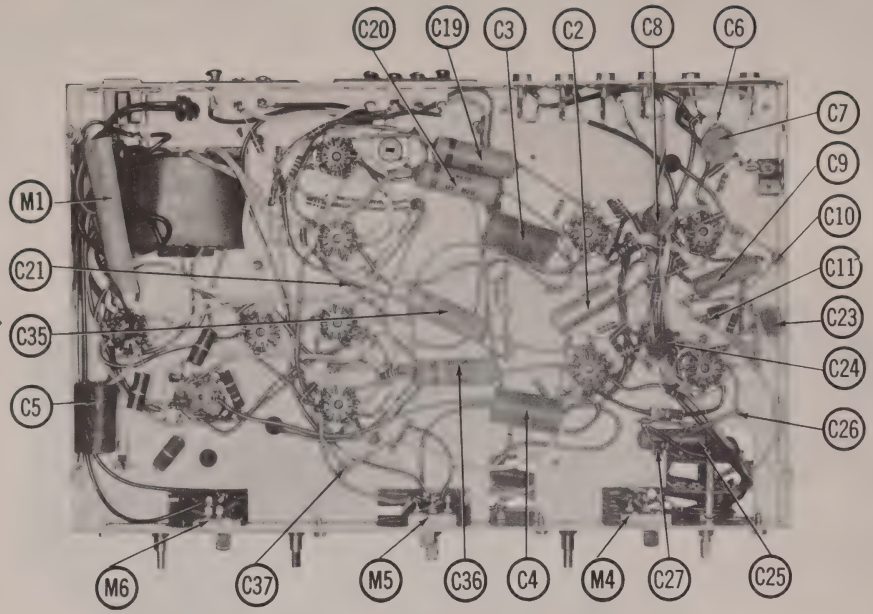
TRADE NAME	Lafayette Model LA-235
SUPPLIER	Lafayette Radio, 165-08 Liberty Ave., Jamaica 33, N. Y.
TYPE SET	AC Operated 10 Tube Stereo Audio Amplifier
POWER SUPPLY	105 - 125 Volts AC, 60 Cycles RATING 110 Watts, 1.1 Amp. @ 117 Volts AC

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

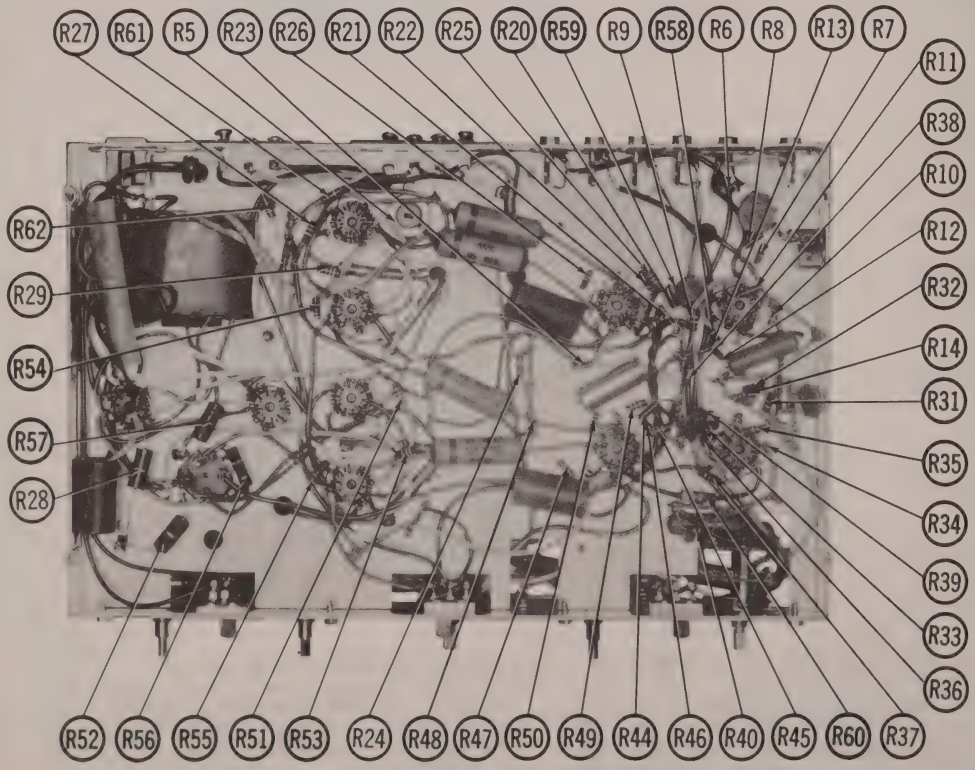
The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1960 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

KV017

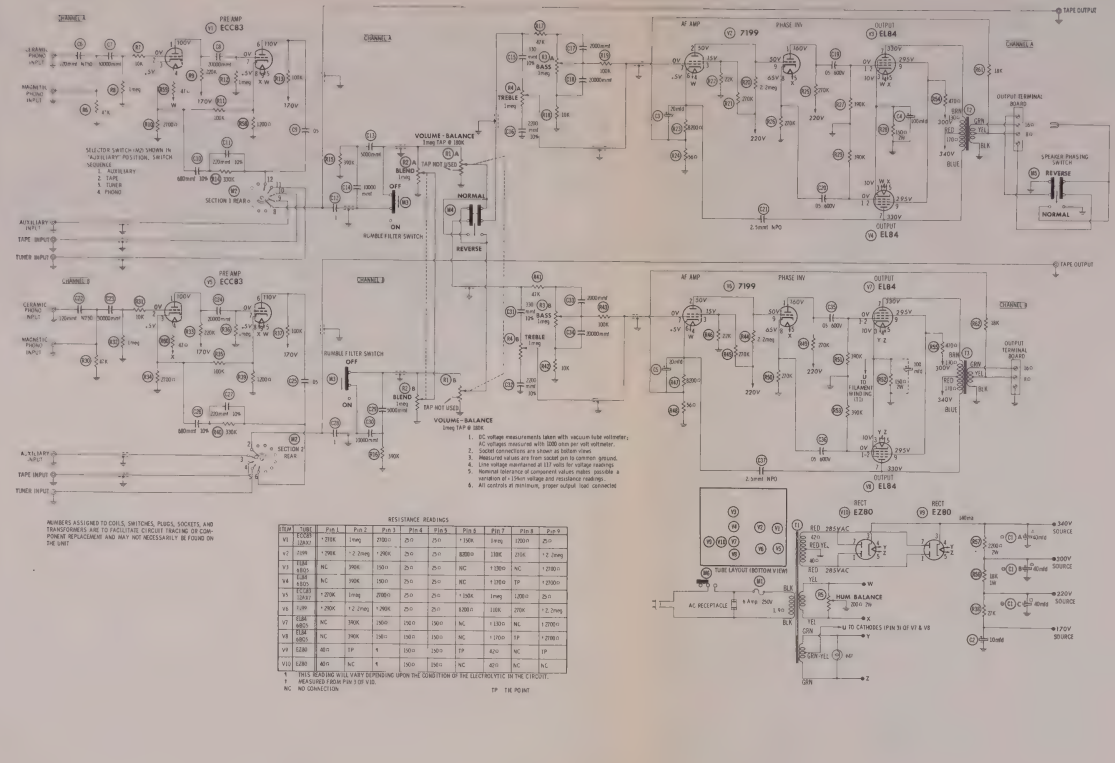
SET 502 FOLDER 11



CHASSIS BOTTOM VIEW - CAPACITOR & MISC. IDENT.



CHASSIS BOTTOM VIEW - RESISTOR IDENT.



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom view.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ± 15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OF COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT

RESISTANCE READINGS

ITEM	TUBE SOCKET	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	ECC83 (2A3)	*270K	1meg	270Ω	0	0	*150K	1meg	1200Ω	0
x2	7199	*.79MΩ	*2.2meg	*290K	0	0	820Ω	180K	220K	*2.2meg
V3	EL84 (6BQ5)	NC	390K	150Ω	0	0	NC	*130Ω	NC	*270Ω
V4	EL84 (6BQ5)	NC	390K	150Ω	0	0	NC	*130Ω	TP	*270Ω
V5	ECC83 (2A3)	*270K	1meg	270Ω	0	0	*150K	1meg	1200Ω	0
V6	7199	*.79K	*2.2meg	*290K	0	0	820Ω	180K	220K	*2.2meg
V7	EL84 (6BQ5)	NC	390K	150Ω	150Ω	150Ω	NC	*130Ω	NC	*270Ω
V8	EL84 (6BQ5)	NC	390K	150Ω	150Ω	150Ω	NC	*170Ω	TP	*270Ω
V9	EZ80	40Ω	TP	0	150Ω	150Ω	TP	42Ω	NC	TP
V10	EZ80	40Ω	NC	0	150Ω	150Ω	NC	42Ω	NC	NC

* THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT. MEASURED FROM PIN 3 OF V10.
NC NO CONNECTION
TP TIE POINT

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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LAFAYETTE MODEL LA-235

PARTS LIST AND DESCRIPTIONS

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

TUBES

◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆

ITEM No.	USE	TYPE
V1	Channel A Preamp.	ECC83/12AX7
V2	Channel A AF Amp. - Channel A Phase Inv.	7199
V3	Channel A Output	EL84/6BQ5
V4	Channel A Output	EL84/6BQ5
V5	Channel B Preamp.	ECC83/12AX7
V6	Channel B AF Amp. - Channel B Phase Inv.	7199
V7	Channel B Output	EL84/6BQ5
V8	Channel B Output	EL84/6BQ5
V9	Rectifier	EZ80
V10	Rectifier	EZ80

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA LAFAYETTE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲40	350	E-212-8 ①	AFH3-44	C0350	FP425	TMT-3748	TVL-3787	
B	▲40	350							
C	■40	350							
C2	10	250	E-215-9	PRS1620	BR1045	TC52	TD-10-250	TVA-1504	
C3	20	10	E-215-8	PRS1330	BBR20-25	TT15X20	TD-20-150	TVA-1410	
C4	100	25	E-215-6	PRS1270	BR1005	TC2501	TD-100-25	TVA-1207	
C5	20	10	E-215-8	PRS1330	BBR20-25	TT15X20	TD-20-150	TVA-1410	

① Alternate Part #E-212-10.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C6	120 N750			TCN-120	C10T12U	CCTN-121	CN7-312	10TCU-T12
C7	30000		BPD-03	DD-303	BYB6S3	CCD-303	GP130	5HK-S30
C8	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C9	.05 200V		P288N-05	DD-503	CUB2S5	4DP-3-503	GEM-415	2TM-S5
C10	680 10%		DI-680	DD-681	5R5T68	CCD-681	GP368	10TS-T68
C11	220 10%		DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
C12	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P1

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C13	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C14	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C15	330 10%		DI-330	DD-331	L10T33	CCD-331	GP333	10TS-T33
C16	2200 10%		DI-2200		PM6D22	CCD-222	GP222	10TS-D22
C17	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C18	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C19	.05 600V		P688N-05	DD-503	CUB6S5	6DP-3-503	GEM-615	6TM-S5
C20	.05 600V		P688N-05	DD-503	CUB6S5	6DP-3-503	GEM-615	6TM-S5
C21	2.5 NPO		NPO-DI 2.2	DTZ-2R2	C10V22C	CCTO-2R2	CNO-522	10TCC-V22
C22	120 N750			TCN-120	C10T12U	CCTN-121	CN7-312	10TCU-T12
C23	30000		BPD-03	DD-303	BYB6S3	CCD-303	GP130	5HK-S30
C24	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C25	.05 200V		P288N-05	DD-503	CUB2S5	4DP-3-503	GEM-415	2TM-S5
C26	680 10%		DI-680	DD-681	5R5T68	CCD-681	GP368	10TS-T68
C27	220 10%		DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
C28	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P1
C29	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C30	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C31	330 10%		DI-330	DD-331	L10T33	CCD-331	GP333	10TS-T33
C32	2200 10%		DI-2200		PM6D22	CCD-222	GP222	10TS-T22
C33	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C34	20000		BPD-02	DD-203	BYA10S2	CCD-203	B-120	5HK-S20
C35	.05 600V		P688N-05	DD-503	CUB6S5	6DP-3-503	GEM-615	6TM-S5
C36	.05 600V		P688N-05	DD-503	CUB6S5	6DP-3-503	GEM-615	6TM-S5
C37	2.5 NPO		NPO-DI 2.2	DTZ-2R2	C10V22C	CCTO-2R2	CNO-522	10TCC-V22

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA LAFAYETTE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg	½	V-324A-3					Volume, Channel A
	180K Tap		(Note 1)					
B	1meg	½						Balance, Channel B
	180K Tap							
R2A	1meg	½	V-319A-5	B-69	AD47-1meg-S		FA16L	Blend, Channel A
B	1meg	½		SR-69	Not Req.		RU16L	Blend, Channel B
C	Shaft			Not Req.	KSS-3		CS3500	
R3A	1meg	½	V-323-7	F1-51		† QJ-1283R	■ UE4139	Bass, Channel A
B	1meg	½		R2-51				Bass, Channel B
R4A	1meg	½	V-323-7	F1-51		† QJ-1283R	■ UE4139	Treble, Channel A
B	1meg	½		R2-51				Treble, Channel B
R5A	200Ω	2(WW)		WN-201	A43-200	WPK-200	FL200P	Hum Balance
B	Shaft			Not Req.	FKS-1/4	Not Req.	Not Req.	

Note 1. Clutch type control. To adjust either control independently, pull small knob (inside shaft) outward until a click is heard. After adjusting, push shaft in and controls turn simultaneously.

† "CONCENTRIKIT" equivalent: K-5 kit with base elements & shafts: B11-137, P1-017 (Panel) B11-137, R1-028 (Rear) (Not available as a factory assembled unit)

■ "STA-LOC" equivalent: FB16L, RU16L, C6562A, IS875

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R6	47K	
R7	10K	
R8	1meg	
R9	220K	
R10	2700Ω	
R11	100K	
R12	1meg	
R13	100K	
R14	330K	
R15	390K	
R16	390K	
R17	47K	
R18	10K	
R19	100K	
R20	2.2meg	
R21	270K	
R22	22K	
R23	8200Ω	
R24	56Ω	

ITEM No.	RATING	REMARKS
R25	270K	
R26	270K	
R27	390K	
R28	150Ω 2W	
R29	390K	
R30	47K	
R31	10K	
R32	1meg	
R33	220K	
R34	2700Ω	
R35	100K	
R36	1meg	
R37	100K	
R38	27K	
R39	1200Ω	
R40	330K	
R41	47K	
R42	10K	
R43	100K	

ITEM No.	RATING	REMARKS
R44	2.2meg	
R45	270K	
R46	22K	
R47	8200Ω	
R48	56Ω	
R49	270K	
R50	270K	
R51	390K	
R52	150Ω 2W	
R53	390K	
R54	470Ω	
R55	470Ω	
R56	18K 1W	
R57	2200Ω 2W	
R58	1200Ω	
R59	.47Ω	
R60	.47Ω	
R61	18K	
R62	18K	

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	PRI.	SEC. 1	SEC. 2	LAFAYETTE PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	117V @ 1.1A	570 VCT @ .140A	6.3VCT @ 2.8A	PT-176A-1						
	SEC. 3	SEC. 4	SEC. 5							
	6.3V @ 2.7A									

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	LAFAYETTE PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	8100Ω CT	16Ω Tap @ 8Ω	T-175-1						
T3	8100Ω CT	16Ω Tap @ 8Ω	T-175-1						

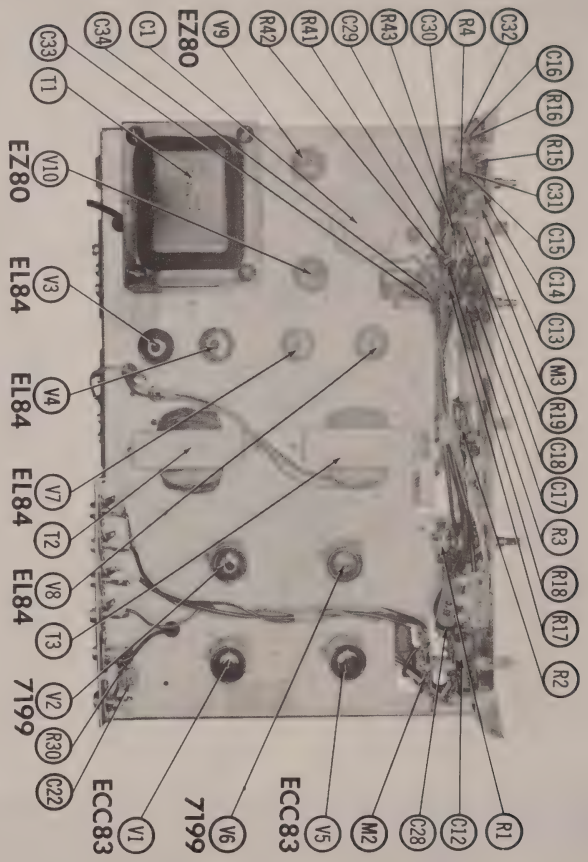
FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			LAFAYETTE PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG	6A 250V P/T			318006 (3AG 6A 250V) P/T		GJV-6	

MISCELLANEOUS

ITEM No.	PART NAME	LAFAYETTE PART No.	NOTES
M2	Switch	BS-836-10	Function Selector (Rotary Type)
M3	Switch		Rumble Filter (DPDT, Slide Type)
M4	Switch		Normal-Reverse, Channels (DPDT, Slide Type)
M5	Switch		Normal-Reverse, Phasing (DPDT, Slide Type)
M6	Switch		Power Off-On (SPST, Slide Type)

CHASSIS—TOP VIEW



CABINETS & CABINET PARTS

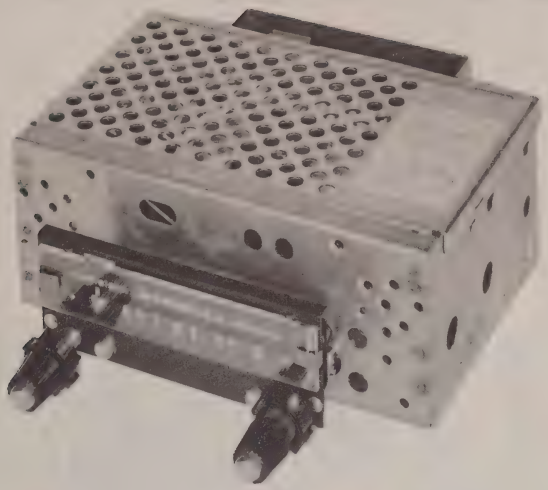
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	K-494-3	Tone, Volume (Outer)
Knob	K-494-4	Tone, Volume (Inner)
Knob	K-493-2	Selector, Blend

PHOTOFACT® Folder

MOTOROLA
MODEL 10M

MOTOROLA
MODEL 10M



TRADE NAME	Motorola Model 10M
MANUFACTURER	Motorola Inc., 4545 W. Augusta Blvd., Chicago 51, Illinois
TYPE SET	Battery Operated 4 Tube, 2 Transistor Universal Type Automobile AM Receiver
POWER SUPPLY	6 Volt Storage Battery RATING 2.6 Amp. @ 6.3 Volts DC
TUNING RANGE—BROADCAST	540 — 1610KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:
A1 thru A4....GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545
A5, A6, A7....GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520
A8, A9, A10....GENERAL CEMENT #9050-L, 9150
WALSCO #2521, 2524

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to pin 7 (grid) of Converter. Low side to chassis.	262.5KC (400∿ Mod.)	High end stop.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	Thru Dummy (Fig. 1) to antenna receptacle.	1610KC	"	"	A5, A6, A7	"
	Step 3 is not necessary unless tuner has been tampered with or associated components have been replaced. If necessary, back cores out of coils but not out of coil forms. Repeat Step 2.					
3.	Thru Dummy (Fig. 1) to antenna receptacle.	1200KC	Tuner carriage 9/32" from high end stop.	"	A8, A9, A10	Adjust for maximum output. Repeat Steps 2 and 3.
4.	With radio installed in car and antenna fully extended, tune in a weak station near 1400KC and adjust A7 for maximum output.					

PUSHBUTTON ADJUSTMENT

1. Pull pushbutton out.
2. Tune manually to desired station.
3. Press pushbutton in firmly.
4. Repeat for remaining pushbuttons.

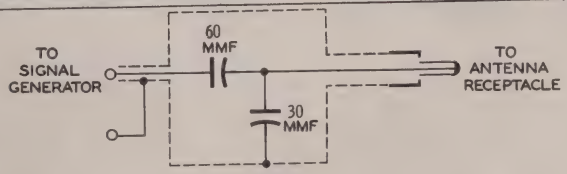


FIG. 1

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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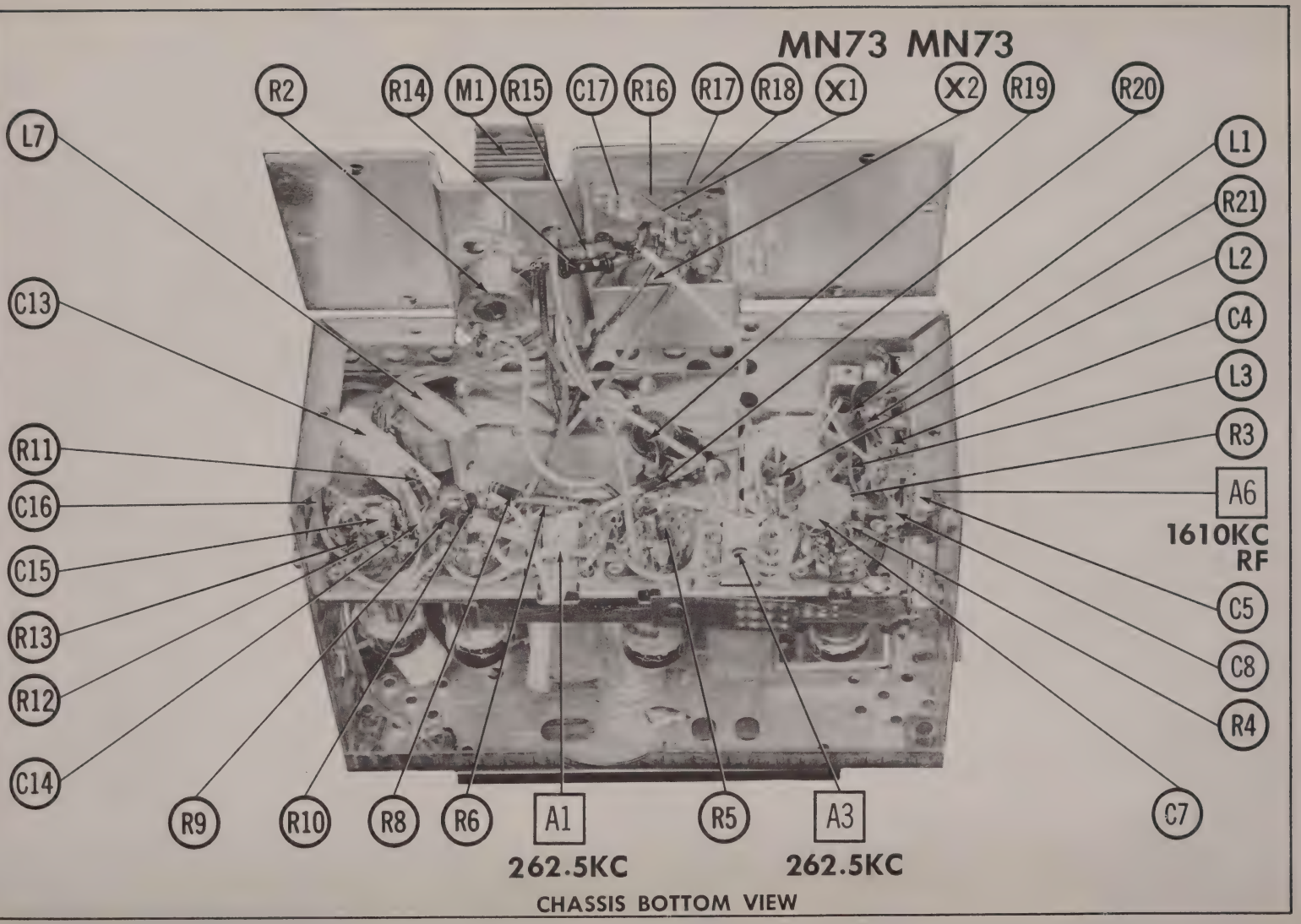
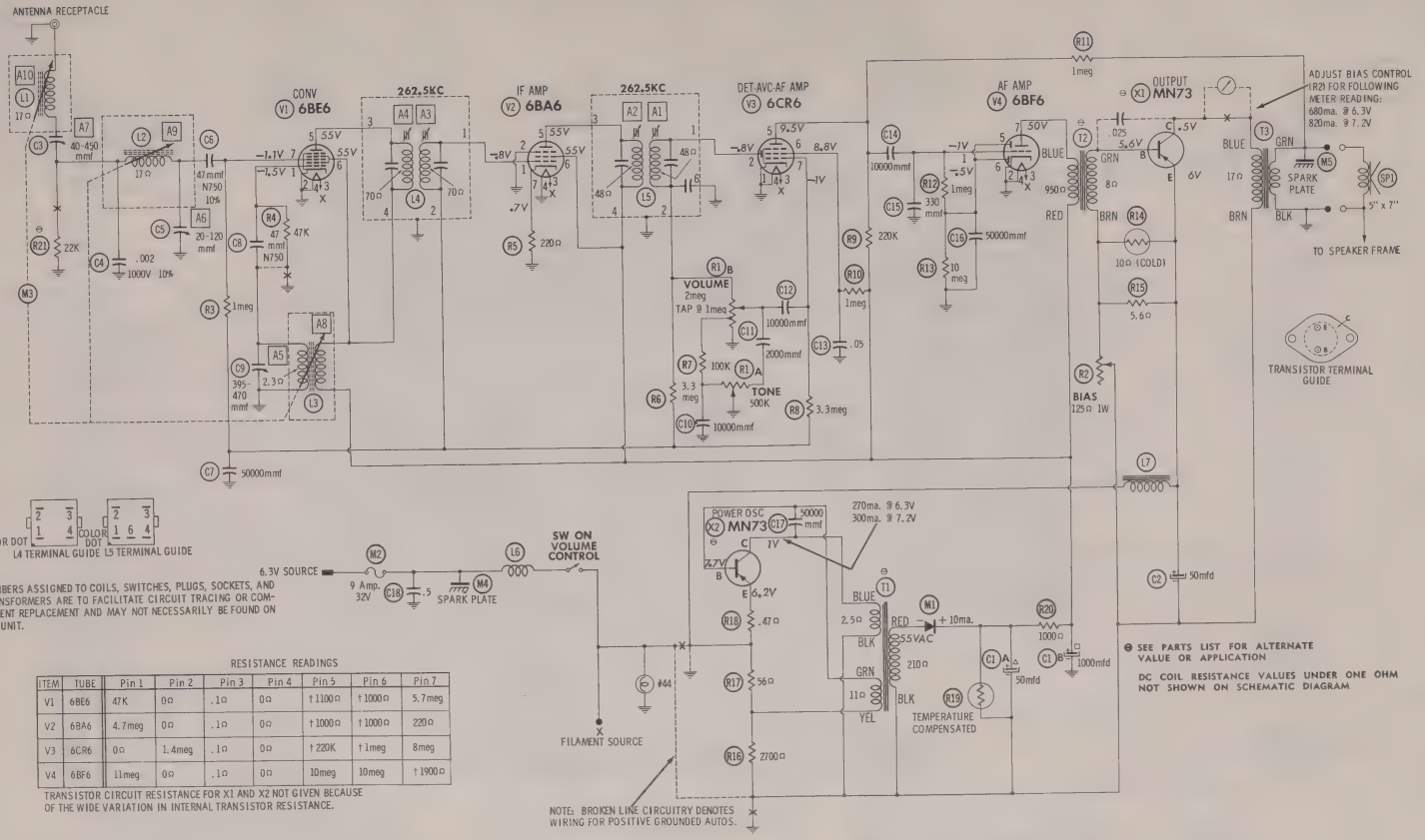
SET 502 FOLDER 12



CHASSIS BOTTOM VIEW



NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	6BE6	47K	0Ω	.1Ω	0Ω	†1100Ω	†1000Ω	5.7meg
V2	6BA6	4.7meg	0Ω	.1Ω	0Ω	†1000Ω	†1000Ω	220Ω
V3	6CR6	0Ω	1.4meg	.1Ω	0Ω	†220K	†1meg	8meg
V4	6BF6	11meg	0Ω	.1Ω	0Ω	10meg	10meg	†1900Ω

TRANSISTOR CIRCUIT RESISTANCE FOR X1 AND X2 NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

NOTE: BROKEN LINE CIRCUITRY DENOTES WIRING FOR POSITIVE GROUNDED AUTOS.

Auto Radios

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Battery voltage maintained at 6.3 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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MOTOROLA
MODEL 10M

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	• GENERAL ELECTRIC • USE	TYPE	ITEM No.	• RAYTHEON • SYLVANIA • USE	TYPE
V1	Converter	6BE6	V3	Det.-AVC-AF Amp.	6CR6
V2	IF Amplifier	6BA6	V4	AF Amplifier	6BF6

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA: CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	NOTES
X1	MN73 *	Output	2N155	2N176		2N176	PNP Note 1
X2	MN73 *	Power Osc.	2N235A	2N176		2N176	PNP Note 1

* Manufacturer recommends replacing with 2N176.

Note 1. When replacing, be certain that insulator is in place. X2 insulator must be coated on both sides with DC-4 grease (Part # 1M490487) or equivalent. Tighten mounting screws securely.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING: CAP.	RATING: VOLT.	REPLACEMENT DATA: MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲50	150	23B543393	AFH2-77-05	A0200	FP115		TVLS-2406 *	
B	■1000	8			BR10001	TC1501			
C2	50	150	23B543394	PRS1480	BR5015	TC49	TD-50-150	TVA-1414	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3	40-450	#20A542758						
C4	.002 1000V 10%					16DP-1-202	GEM-1622	10TM-D2
C5	20-120	#20K541014				302-M		
C6	47 N750 10%		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C7	50000		BPD-05	DD-503	H-05S5	1DP-2-503	GP150	5HK-S5
C8	47 N750		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C9	395-470	#20A485708						
C10	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C11	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C12	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C13	.05 200V		P288N-05	DD-503	CUB2S5	4DP-3-503	GEM-415	2TM-S5
C14	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C15	330		DI 330	DD-331	L10T33	CCD-331	GP333	10TS-T33

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C16	50000		BPD-05	DD-503	H-05S5	1DP-2-503	GP150	5HK-S50
C17	50000		BPD-05	DD-503	H-05S5	1DP-2-503	GP150	5HK-S50
C18	.5 100V		P288N-5		CUB2P5	2DP-5-504	GEM-205	2TM-P5

Motorola Part Number.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MOTOROLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K	½	18K542446	M/U-8	RTV-664C	† QJ-1084A	■ UE3837-S	Tone
B	2meg 1meg Tap	½						Volume
C	Switch							Power Off-On
R2	125Ω	1(WW)	18A542810					Bias

† "Concentrikit" equivalent: K-6 kit with base elements and shafts: B13-133, P17-129 (Panel) B18-139X, R9-214 (Rear) 76-1 (Switch)

■ "STA-LOC" equivalent: FA55A, RU26T16, OS1875, IS2500, US41.

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R3	1meg	
R4	47K	
R5	220Ω	
R6	3.3meg	
R7	100K	
R8	3.3meg	
R9	220K	

ITEM No.	RATING	REMARKS
R10	1meg	
R11	1meg	
R12	1meg	
R13	10meg	
R14	10Ω Cold	#6K543800
R15	5.6Ω	#17K739323
R16	2700Ω	

ITEM No.	RATING	REMARKS
R17	56Ω	
R18	.47Ω	
R19	Temp. Comp.	#6A543419
R20	1000Ω	
R21	22K	Note 1

Motorola Part Number.

Note 1. Not used in some versions.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: MOTOROLA PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Ant. Coil	24B560429				
L2	RF Coil	24B560432				
L3	Osc. Coil	24B560425				
L4	Input IF Trans.	24B543286	BC-350	12-H1	RF-3	
L5	Output IF Trans.	24K543287	BC-354	12-H6		
L6	"A" Lead Hash Choke	24K522238				

PARTS LIST AND DESCRIPTIONS (Continued)

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA						NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 ∿)	MOTOROLA PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
L7	.700A	.4Ω	.002 HY	25B543396			TC-1			

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	INPUT	OUTPUT	SEC. 2	MOTOROLA PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	6.3 VDC	62 VDC		25K543845B ①						

① Alternate Part #25K543845.

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	MOTOROLA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	2.5	1	25K543841-0①					

① Alternate Part #25K54384L

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE	REPLACEMENT DATA						NOTES
	PRI.	MOTOROLA PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T3	5Ω Tap③ 3-4Ω	25C543416						

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	MOTOROLA PART No.	QUAM PART No.	
SP1	5"x 7"	PM	3-4Ω	50C541964	57A21	

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT (Measured)	MOTOROLA PART No.	ITT PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
M1	.010A	48K543405 *	1234AH *	1N1764	65A *	SR200 ♦	* Selenium Type ♦ Silicon Type

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			MOTOROLA PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	SFE	9A 32V	65K16248	1V541705 ①	307009 (SFE 9A 32V)	155009	SFE 9	HRH

① Includes adaptor arm.

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M3	Tuner	77D560423	Complete (MT-238)
M4	Spark Plate	64K530177	
M5	Spark Plate		

CABINETS & CABINET PARTS

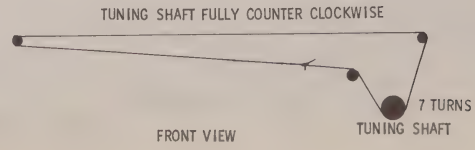
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

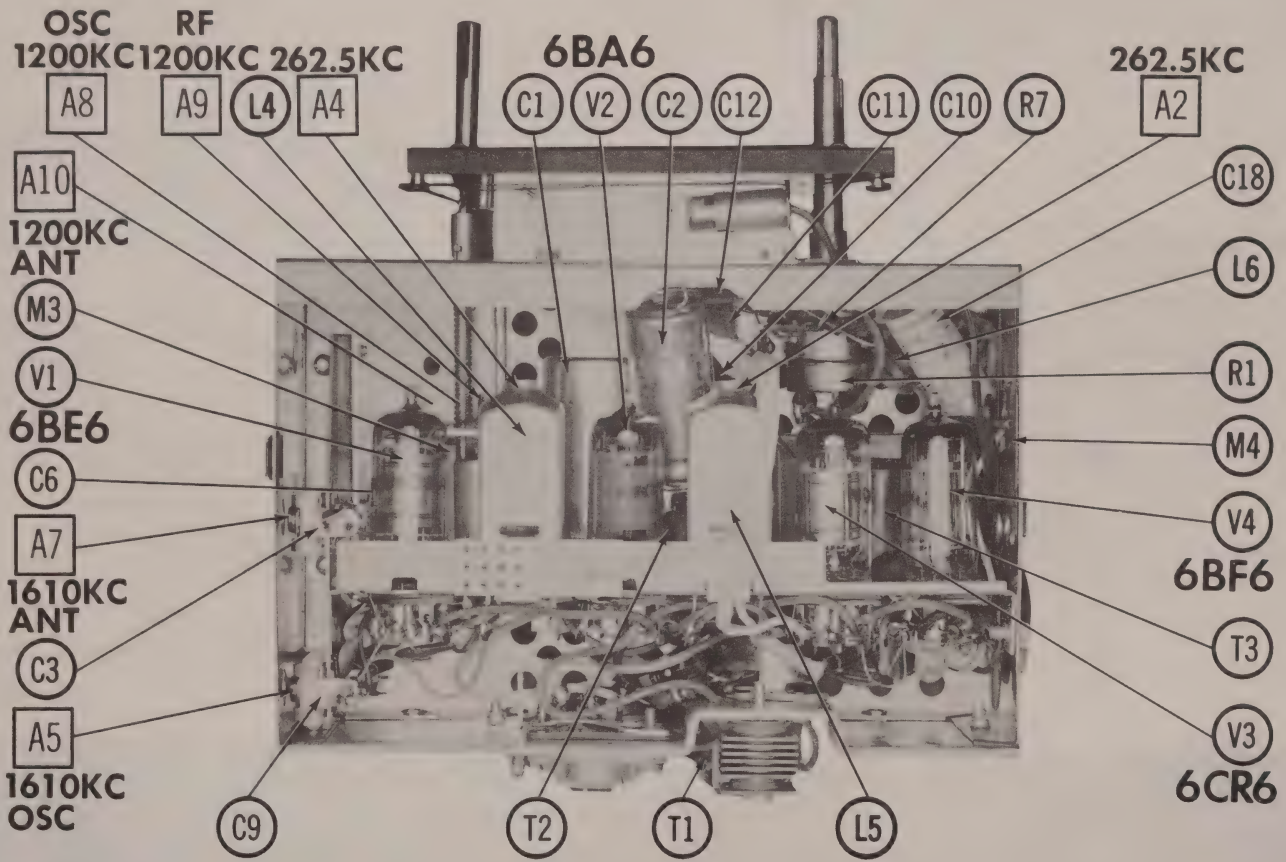
NAME	PART NO.	DESCRIPTION
Knob	36B540048	Tuning, Volume
Knob	36B540050	Tone
Knob	36K540051	Dummy
Pointer	1K532594	
Dial Scale	34B541017	

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire	Use BELDEN No. 8885
Bonding Strap	Use BELDEN No. 8661

DIAL CORD STRINGING





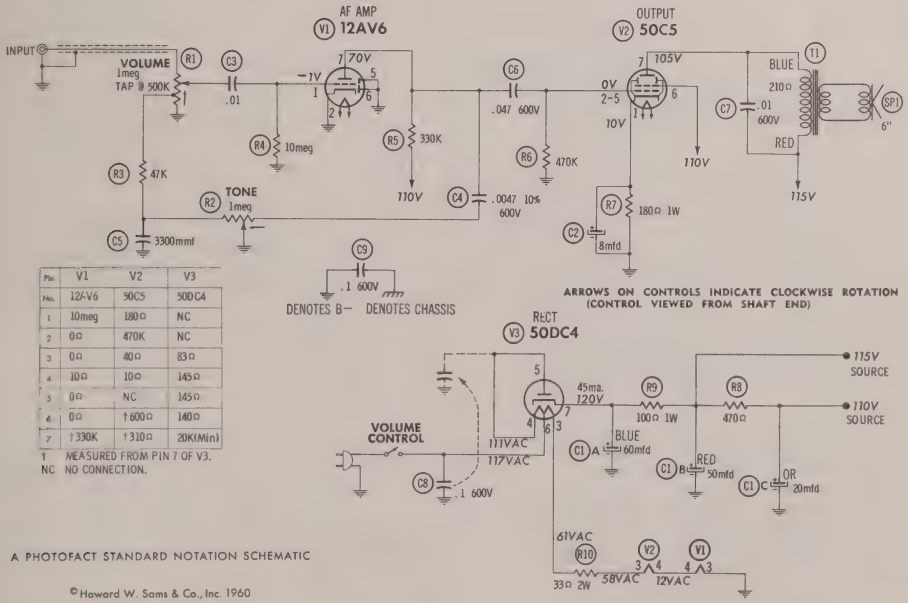
CHASSIS - TOP VIEW

PHOTOFACT® Folder

MUNTZ MODELS R-15B, R-15M

MUNTZ MODELS
R-15B, R-15M

TRADE NAME	Muntz Models R-15B, R-15M
MANUFACTURER	Muntz TV, Inc., 1000 Grey Ave., Evanston, Illinois
TYPE SET	AC-DC Operated 3 Tube Audio Amplifier
POWER SUPPLY	110 — 120 Volts AC, 60 Cycles RATING 25 Watts, .24 Amp. @ 117 Volts AC



Pin No.	V1 12AV6	V2 50C5	V3 50DC4
1	10meg	180Ω	NC
2	0Ω	470K	NC
3	0Ω	40Ω	83Ω
4	10Ω	10Ω	145Ω
5	0Ω	NC	145Ω
6	0Ω	†600Ω	140Ω
7	†330K	†310Ω	20K(Min)

† MEASURED FROM PIN 7 OF V3.
NC NO CONNECTION.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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SET 502 FOLDER 13

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (GENERAL ELECTRIC • RAYTHEON • SYLVANIA)
V1	AF Amplifier	12AV6
V2	Output	50C5
V3	Rectifier	50DC4

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA MUNTZ PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	60	150	CE-8001	PR3-030	BBRT84215	TCT3119	CDB-Q-1013	TVA-3455	
B	50	150							
C	20	150							
C2	8	25	CE-0018	PRS1405	BBR8-150	TT25X8	TD-8-150	TVA-1405	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3	.01 400V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S1
C4	.0047 600V 10%		V84C6D47-10%		PM6D47	6DP-1-472	JL-247	6TM-D47
C5	3300		BPD-0033	DD-332	BYA10D33	CCD-332	B-233	5HK-D33
C6	.047 600V		P688N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47
C7	.01 600V		P688N-01	D6-103	CUB6S1	6DP-2-103	GEM-611	6TM-S1
C8	.1 600V		P688N-1	DF-104	CUB6P1	6DP-4-104	GEM-601	6TM-P1
C9	.1 600V		P688N-1	DF-104	CUB6P1	6DP-4-104	GEM-601	6TM-P1

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA MUNTZ PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg *	½	VC-8002	BT-71	A47F5-1meg	Q19-137X	UT443	Volume
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
C	Switch			KR-1	SWE-12	76-1	US-26	Power Off-On
R2A	1meg	½	VC-8003	B-69	A47-1meg-S	Q11-137	U54	Tone
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	

* Tap @ 500K

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R3	47K	
R4	10meg	
R5	330K	

ITEM No.	RATING	REMARKS
R6	470K	
R7	180Ω 1W	
R8	470Ω	

ITEM No.	RATING	REMARKS
R9	100Ω 1W	
R10	33Ω 2W	

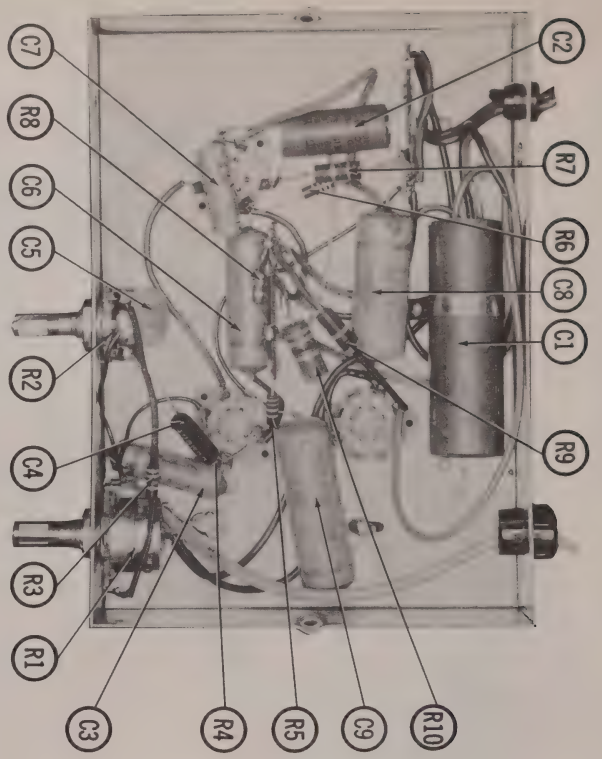
TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA MUNTZ PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	2600Ω	3-4Ω	T0-0053	A-2902	AU-604	A-3849	24S64	S-53X	

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA MUNTZ PART No.	QUAM PART No.	NOTES
SP1	6"	PM	3-4Ω	SK-0026-1	6A1	

CHASSIS—BOTTOM VIEW



CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	KB-8011	Volume
Knob	KB-8011-1	Treble
Cabinet	CW-0111-4	Blonde, Model R-15B
Cabinet	CW-0111-2	Mahogany, Model R-15M

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

PHOTOFACT® Folder

OLYMPIC
MODEL 442W-1

OLYMPIC
MODEL 442W-1

OLYMPIC
MODEL 442W-1

TRADE NAME	Olympic Model 442W-1
MANUFACTURER	Olympic, A Div. of The Siegler Corp., 34-01 38th Ave., Long Island City 1, N. Y.
TYPE SET	AC-DC Operated 5 Tube BC-SW Receiver
POWER SUPPLY	105 –125 Volts AC-DC RATING 28 Watts, .27 Amp. @117 Volts AC
TUNING RANGE—BROADCAST	540 – 1620KC SHORT WAVE 4.75 – 16.1MC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools: A1 thru A4..... GENERAL CEMENT #5097, 8727
WALSCO #2515
A5 thru A9.....GENERAL CEMENT #5000, 5003, 5066, 8276, 8290, 9087, 9089
WALSCO #2512, 2525, 2528

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to pin 8 (grid) of Converter. Low side to chassis.	455KC (400~ Mod.)	(BC) Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	Loop	1500KC	(BC) 1500KC	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.	"	1500KC	(BC) Tune to 1500KC Signal.	"	A6	"
4.	"	600KC	(BC) Tune to 600KC Signal.	"	A7	Adjust for maximum output while rocking tuning gang.
5.	High side thru 400Ω to antenna wire on loop.	15MC	(SW) 15MC	"	A8	Adjust for maximum output at second peak from tight position.
6.	"	"	"	"	A9	Adjust for maximum output while rocking tuning gang.
7.	"	5MC	(SW) 5MC	"		Check calibration and if necessary, repeat Steps 6 and 7.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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JG972

SET 502 FOLDER 14

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (• GENERAL ELECTRIC • RAYTHEON • SYLVANIA •)
V1	Converter	12SA7
V2	1F Amplifier	12BA6
V3	Det. -AVC-AF Amp.	12AV6
V4	Output	50C5
V5	Rectifier	35W4

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA OLYMPIC PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	■40	150	C0-1715	AFH2-14	XB0141	FP212	TMD-11	TVL-2428	
B	▲40	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C3	1.5-15	#CT-3231				460		
C4	1.5-15	#CT-3231				460		
C5	100		1468-0001	DD-101	5W5T1	CM-19B-101M	MC235	1FM-31
C6	.02 400V		P488N-02	DD-203	CUB4S2	4DP-2-203	GEM-412	4TM-S2
C7	100		1468-0001	DD-101	5W5T1	CM-19B-101M	MC235	1FM-31
C8	4000 5%		1464-004		1R5D4	CM-20B-392J	MCE463	MS-24
C9	3-35	#CT-389				403		
C10	350-780	#CT-440				469		
C11	3-35	#CT-389				403		
C12	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C13	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C14	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C15	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10

Olympic Part Number.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA OLYMPIC PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K	½	PT-102	B-60-S	A47-500K-Z	Q13-133	U53	Volume
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
C	Switch			Not Req.	SWE-12	76-1	US-26	Power Off-On

RESISTORS (IRC or EQUIVALENT)

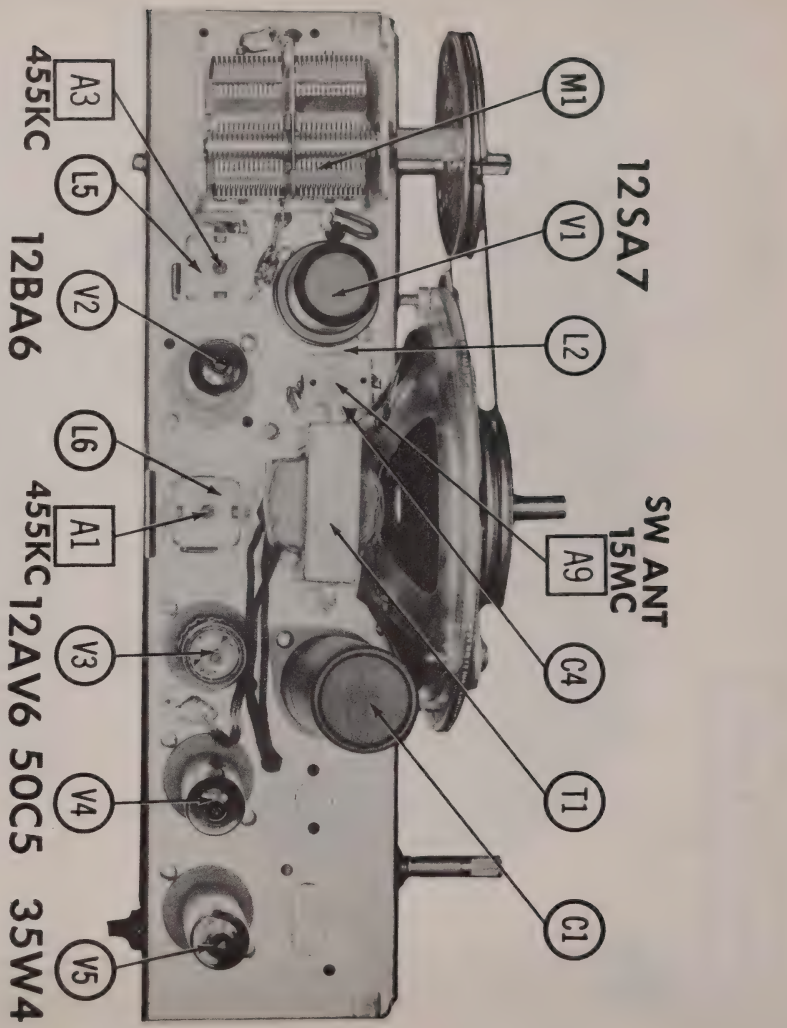
All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	1meg	
R3	33K	
R4	2.2meg	
R5	68Ω	
R6	1000Ω	
R7	150Ω	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	OLYMPIC PART No.	REPLACEMENT DATA	
K1	Diode RF Filter	150mmf, 150mmf, 47K	PC2478	Aerovox Centralab Cornell-Dubilier Sprague	PC-98 PC-51 1i1TM2 D-2
K2	Audio Coup. Net	220mmf, 250mmf, 2000mmf, 470K, 470K, 6.8meg, 5000mmf	PC2477	Aerovox Centralab Cornell-Dubilier Sprague	PA-113-1 PC-150 1i6TM1 DT-1

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		OLYMPIC PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loop Ant.	LP-3121				Note 1
L2	SW Ant. Coil	CL-3290				
L3A	SW Osc. Coil	CL-3289				
B	BC Osc. Coil					
L4	Cathode Choke					
L5	Input IF Trans.	TR-1644	BC-352	12-C1	RF-1	
L6	Output IF Trans.	TR-1644	BC-353	12-C2	RF-2	
L7	RF Choke	*				

Note 1. Not used in some versions.
* 12 Turns #20 insulated wire wound on C14.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	OLYMPIC PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2300Ω Tap@ 4%	3-4Ω	(Part of SP1)	A-3031		A-3330	24S87	S-16X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	OLYMPIC PART No.	QUAM PART No.	
SP1	5"	PM	3-4Ω	SK5354 *	5A07	* Includes T1.

MISCELLANEOUS

ITEM No.	PART NAME	OLYMPIC PART No.	NOTES
M1	Tuning Cap.	CV-3115	2 Gang (Ant. 26-495mmf, Osc. 21-157mmf)
M2	Switch	SW-839	BC-SW Band Selector

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

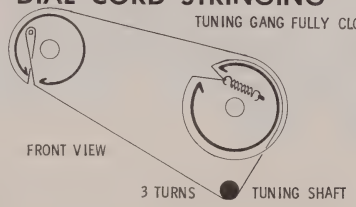
NAME	PART NO.	DESCRIPTION
Pointer	PO-3229	Dial
Knob	KN-3209-1	Tuning, Volume, Walnut
Knob	KN-3210-1	BC-SW, Walnut
Cabinet	CA-3200W	Walnut

WIRING DATA

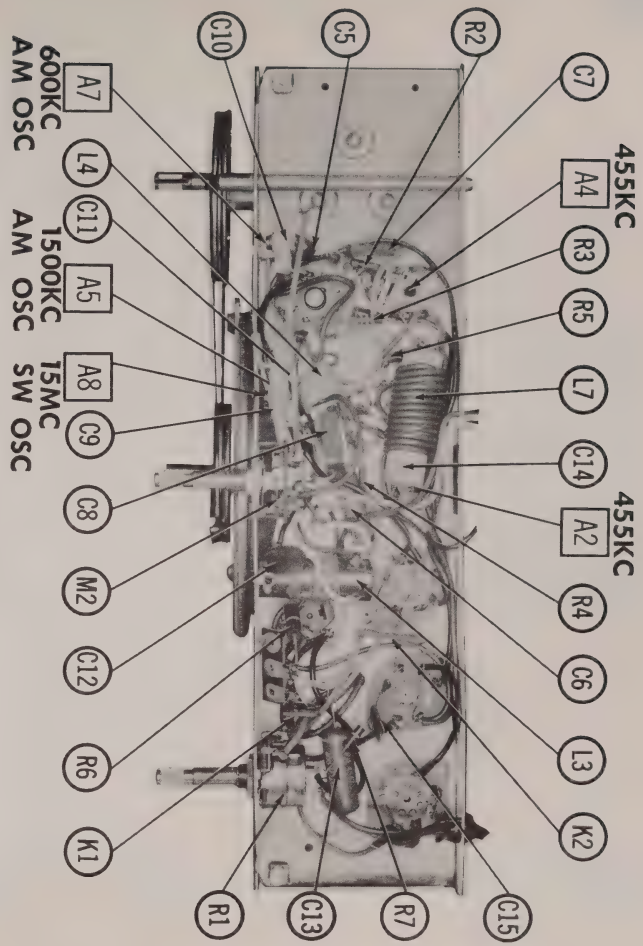
General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

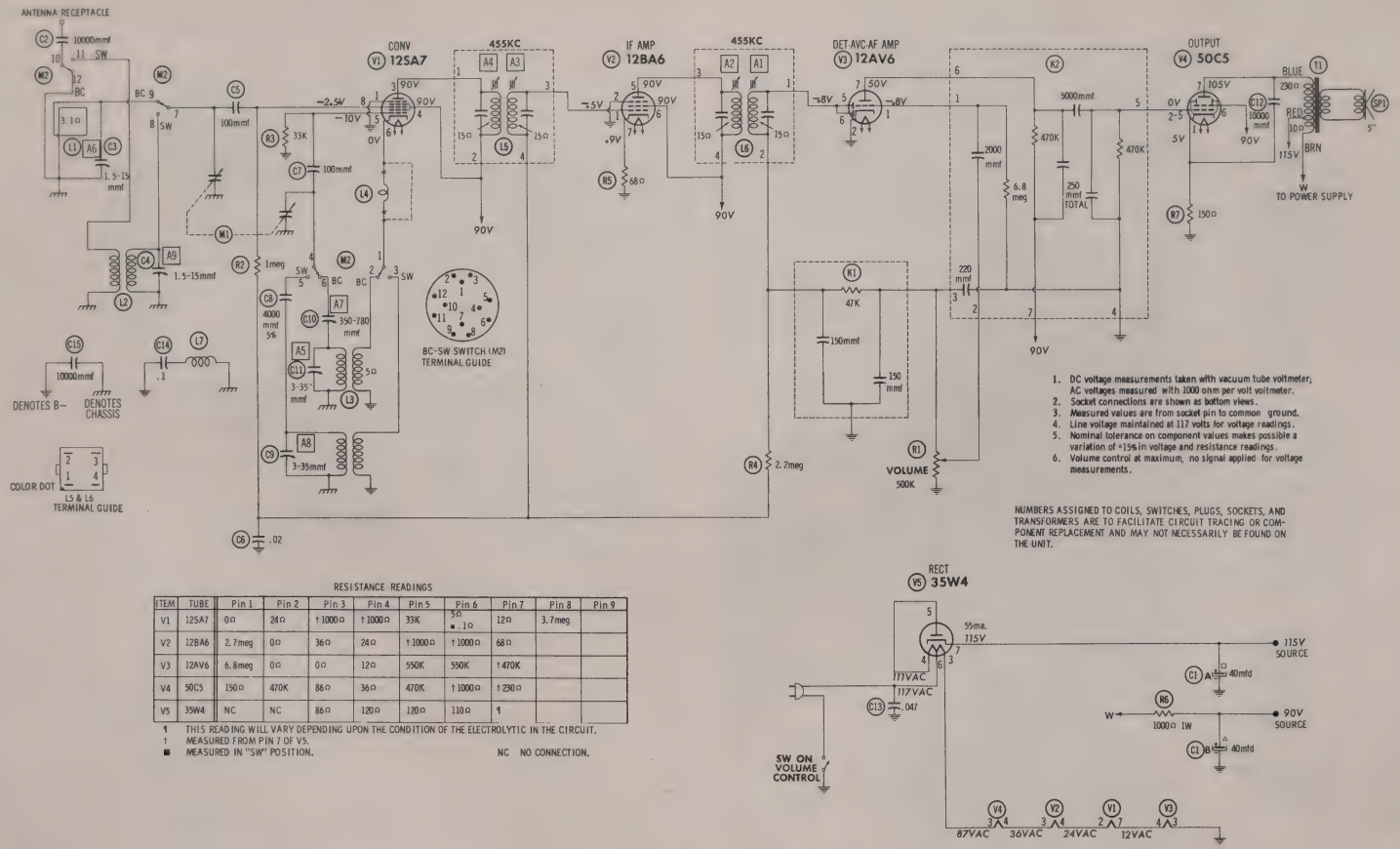
Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

DIAL CORD STRINGING



CHASSIS—BOTTOM VIEW





RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12SA7	0Ω	24Ω	↑1000Ω	↑1000Ω	33K	5Ω ■ .1Ω	12Ω	3.7meg	
V2	12BA6	2.7meg	0Ω	36Ω	24Ω	↑1000Ω	↑1000Ω	68Ω		
V3	12AV6	6.8meg	0Ω	0Ω	12Ω	550K	550K	↑470K		
V4	50C5	150Ω	470K	86Ω	36Ω	470K	↑1000Ω	↑230Ω		
V5	35W4	NC	NC	86Ω	120Ω	120Ω	110Ω	¶		

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
↑ MEASURED FROM PIN 7 OF V5.
■ MEASURED IN "SW" POSITION.
NC NO CONNECTION.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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OLYMPIC MODEL 442W-1

PHOTOFACT® Folder

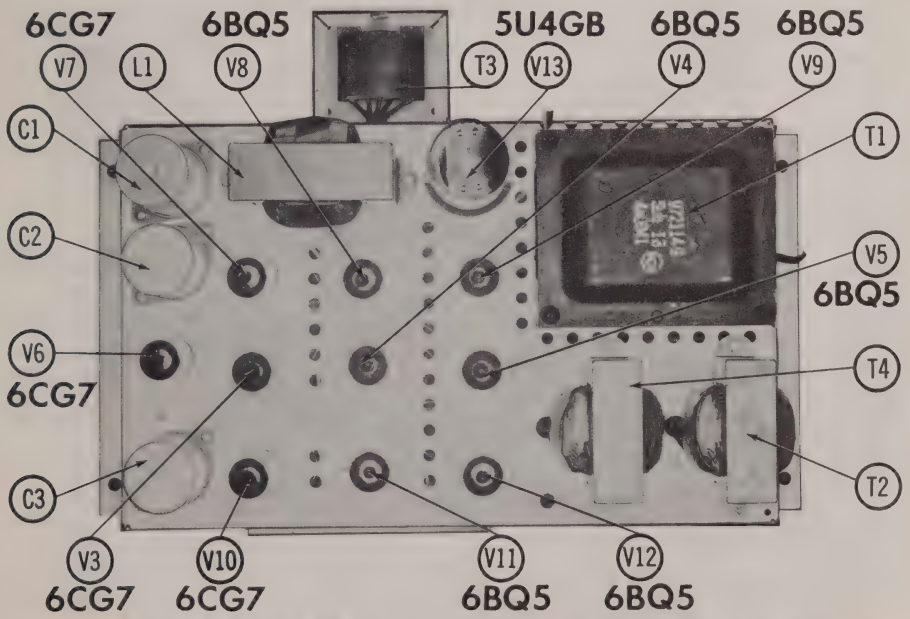
RCA VICTOR KS16, PS16 (CH. RS-179, RS-183)

RCA VICTOR KS16,
PS16 (CH. RS-179, RS-183)

MODEL KS16 MODEL PS16

TRADE NAME	RCA Victor Models PS-16 (Preamp. Ch. RS-179, Amp. Ch. RS-183), KS-16 (External Speaker Unit)
MANUFACTURER	RCA Victor Radio & "Victrola" Div., Radio Corp. of America, Camden 8, N. J.
TYPE SET	AC Operated 2 Tube Stereo Preamplifier, 11 Tube Stereo Amplifier, and 4 Speed Automatic Record Changer
POWER SUPPLY	110-120 Volts AC, 60 Cycles RATING 200 Watts, 1.8 Amp. @117 Volts AC (Less Motor)

FOR SERVICE INFORMATION ON RECORD CHANGER—SEE RCA RP-211-1 — PHOTOFACT SET 475 — FOLDER 7



RCA VICTOR KS16,
PS16 (CH. RS-179, RS-183)

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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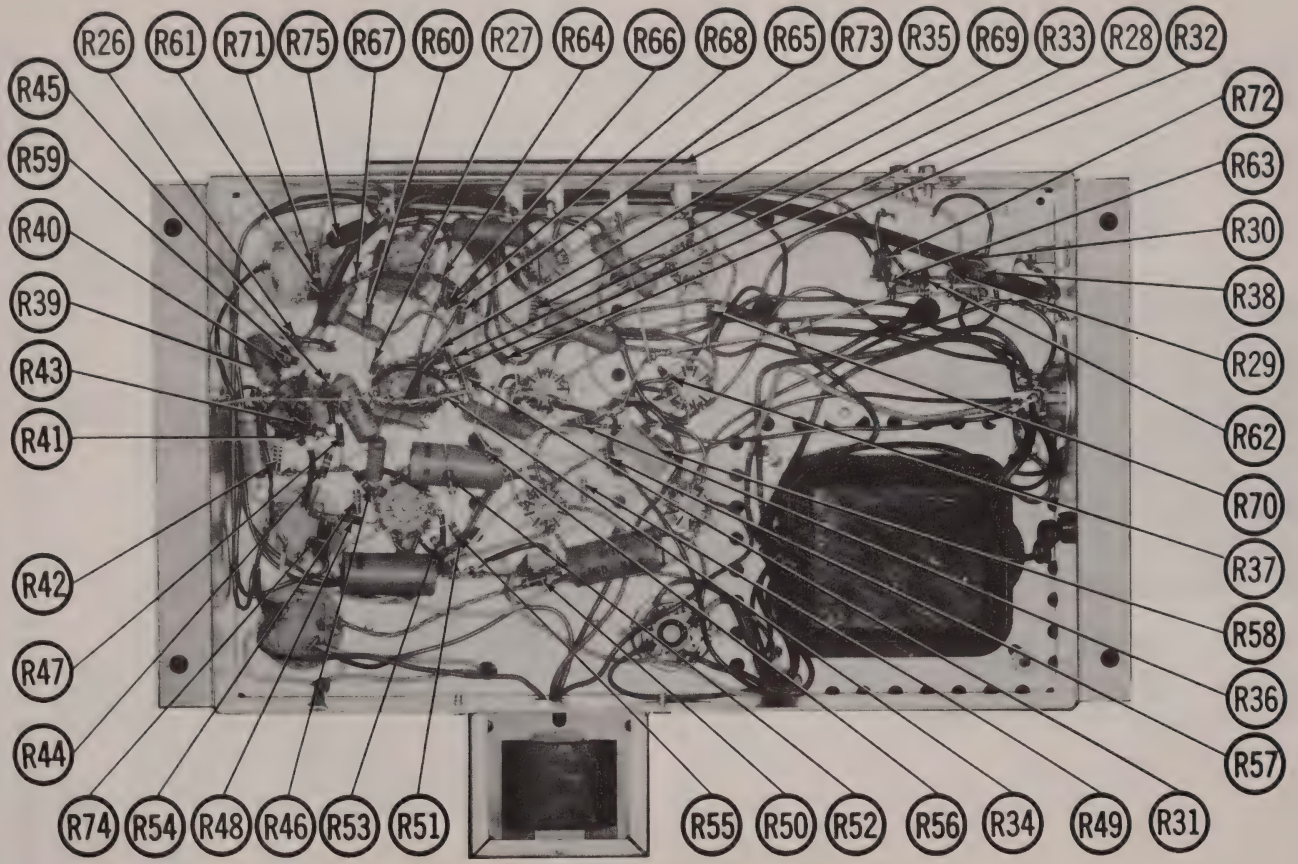
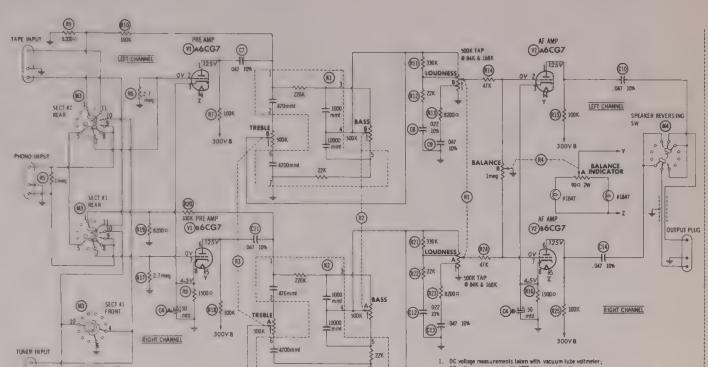
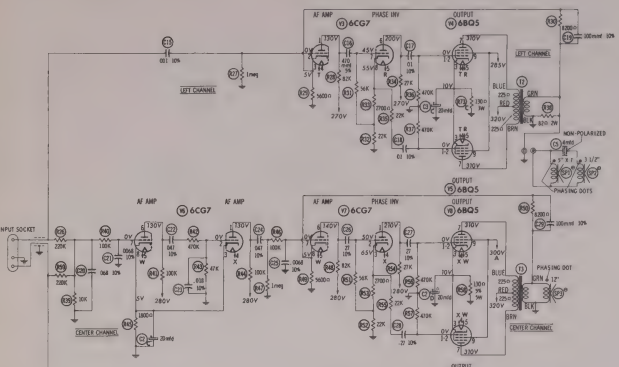
JT961

SET 502 FOLDER 15



AMP CHASSIS BOTTOM VIEW - RESISTOR IDENT.

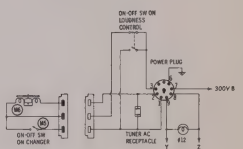

TAPE INPUT
PHONO INPUT
TUNER INPUT
SECT #2 REAR
SECT #1 REAR
SECT #1 FRONT
SELECTOR SW HERE SHOWN IN "PHONO-STEREO" POSITION. SW SEQUENCE: 1. PHONO-STEREO 2. PHONO-MONAURAL 3. TUNER 4. TAPE
PRE AMP V1 6CG7
2ND PRE AMP V2 6CG7
AF AMP V5 6CG7
AF AMP V6 6CG7
LEFT CHANNEL
RIGHT CHANNEL
TREBLE
BASS
LOUDNESS
BALANCE
BALANCE A INDICATOR
SPEAKER REVERSING SW
OUTPUT PLUG
300V B
1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ± 10% in voltage and resistance readings.
6. All controls at minimum, proper output load connected



ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6CG7	* 100K	1.7meg	1500Ω	2Ω	2Ω	* 100K	1.7meg	1500Ω	0Ω
V2	6CG7	* 100K	47K	1500Ω	2Ω	2Ω	* 100K	47K	1500Ω	0Ω
V3	6CG7	* 85K	1meg	1500Ω	INF	INF	* 90K	78K	25K	0Ω
V4	6BQ5	475K	470K	130Ω	INF	INF	NC	* 295Ω	NC	* 1300Ω
V5	6BQ5	475K	470K	130Ω	INF	INF	NC	* 295Ω	NC	* 1200Ω
V6	6CG7	* 100K	47K	1800Ω	2Ω	2Ω	* 100K	110K	1800Ω	0Ω
V7	6CG7	* 90K	78K	25K	2Ω	2Ω	* 85K	1.1meg	1500Ω	0Ω
V8	6BQ5	475K	470K	130Ω	2Ω	2Ω	NC	* 295Ω	NC	* 970Ω
V9	6BQ5	475K	470K	130Ω	2Ω	2Ω	NC	* 295Ω	NC	* 970Ω
V10	6CG7	* 85K	1meg	1500Ω	INF	INF	* 90K	78K	25K	0Ω
V11	6BQ5	475K	470K	130Ω	INF	INF	NC	* 295Ω	NC	* 1300Ω
V12	6BQ5	475K	470K	130Ω	INF	INF	NC	* 295Ω	NC	* 1300Ω
V13	5U4GB	NC	¶	NC	43Ω	NC	43Ω	NC	¶	

RESISTANCE READINGS

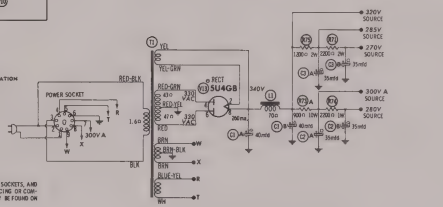
¶ This READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT, MEASURED FROM PIN 8 OF V13.
* NC NO CONNECTION



● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)



NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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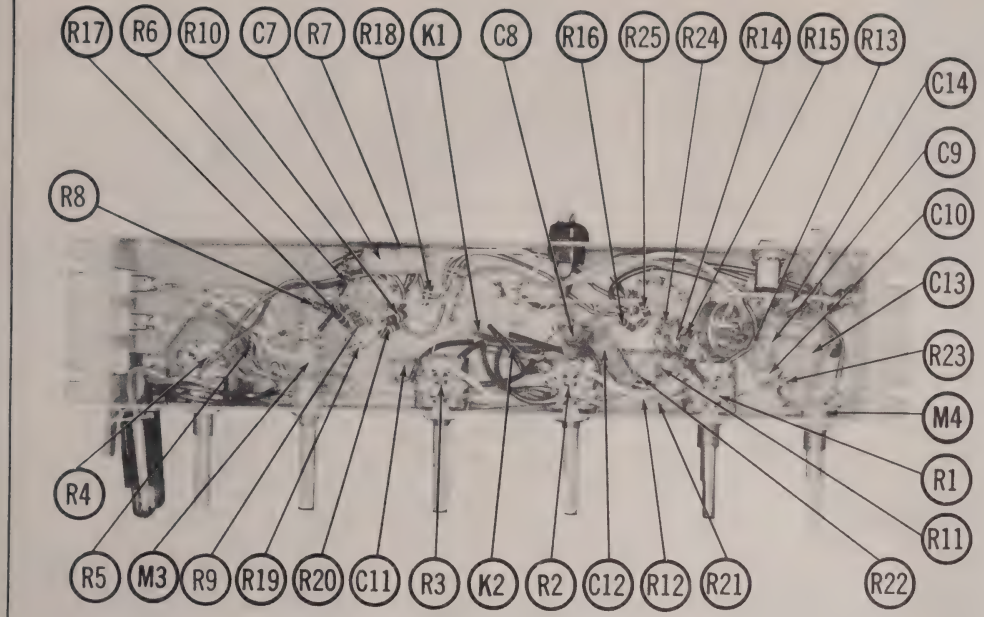
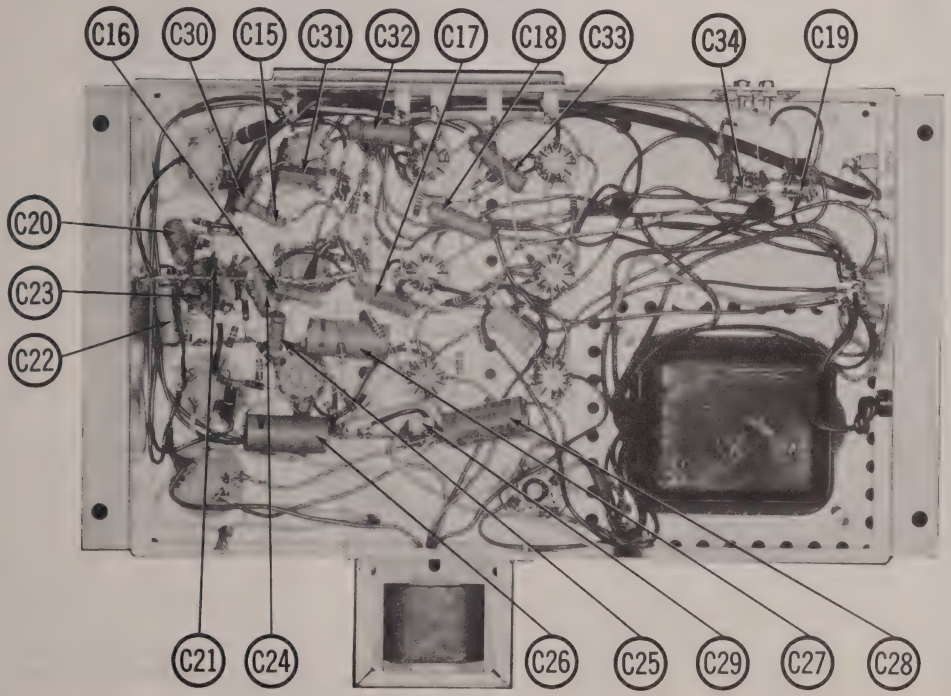
RCA VICTOR KS16, PS16 (CH. RS-179, RS-183)



PREAMP CHASSIS - BOTTOM VIEW



AMP CHASSIS BOTTOM VIEW - CAPACITOR IDENT.

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Left Channel Preamp. - Right Channel Preamp.	6CG7	V7	Center Channel AF Amp. - Center Channel Phase Inv.	6CG7
V2	Left Channel AF Amp. - Right Channel AF Amp.	6CG7	V8	Center Channel Output	6BQ5
V3	Left Channel AF Amp. - Left Channel Phase Inv.	6CG7	V9	Center Channel Output	6BQ5
V4	Left Channel Output	6BQ5	V10	Right Channel AF Amp. - Right Channel Phase Inv.	6CG7
V5	Left Channel Output	6BQ5	V11	Right Channel Output	6BQ5
V6	Center Channel AF Amp.	6CG7	V12	Right Channel Output	6BQ5
			V13	Rectifier	5U4GB (5AS4A) *

GENERAL ELECTRIC • RAYTHEON • SYLVANIA •

* Alternate

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	RCA VICTOR PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲40	450	102913	AFH2-57	B0450	FP238	TMD-54	TVL-2764	
B	▲40	450							
C2A	■35	400	108423	AFH4-79	D0663	FP447		TVL-4737	
B	▲35	400							
C	20	25							
D	▲20	25							
C3A	▲35	400	108423	AFH4-79	D0663	FP447		TVL-4737	
B	■35	400							
C	20	25							
D	▲20	25							
C4A	■50	10	108497	AFH2-06	XB0161	WP202.1	TMD-5	TVL-2320	
B	▲50	10							
C5	4	10NP	106353	NP-PRS7405	BBR4-150	TCN504		TVANS-1150 *	
C6	4	10NP	106353	NP-PRS7405	BBR4-150	TCN504		TVANS-1150 *	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C7	.047 400V 10%		V84C4S47-10%		PM4S47	4DP-3-473	GEM-1615	4TM-S47
C8	.022 200V 10%		V84C2S22-10%		PM4S22	4DP-2-223	GEM-16122	2TM-S22
C9	.047 200V 10%		V84C2S47-10%		PM2S47	4DP-3-473	GEM-1615	2TM-S47
C10	.047 400V 10%		V84C4S47-10%		PM4S47	4DP-3-473	GEM-1615	4TM-S47
C11	.047 400V 10%		V84C4S47-10%		PM4S47	4DP-3-473	GEM-1615	4TM-S47
C12	.022 200V 10%		V84C2S22-10%		PM4S22	4DP-2-223	GEM-16122	2TM-S22
C13	.047 200V 10%		V84C2S47-10%		PM2S47	4DP-3-473	GEM-1615	2TM-S47
C14	.047 400V 10%		V84C4S47-10%		PM4S47	4DP-3-473	GEM-1615	4TM-S47
C15	.001 200V 10%		V84C6D1-10%	DD-102	PM6D1	6DP-1-102	GEM-1621	6TM-D1
C16	470 5%		1469-00047		5R5T47	CM-19B-471J	MCJ244	MS-347
C17	.01 400V 10%		V84C4S1-10%		PM4S1	4DP-1-103	GEM-1611	4TM-S1
C18	.01 400V 10%		V84C4S1-10%		PM4S1	4DP-1-103	GEM-1611	4TM-S1
C19	100 10%		NPO-S1 100	D6-101	L10T1	CCD-101	GP310	10TS-T10
C20	.068 200V 10%		V84C2S68-10%		PM4S68	4DP-3-683		4TM-S68
C21	.0068 200V 10%		V84C2D68-10%		PM6D68	6DP-1-682	GEM-16268	6TM-D68
C22	.047 400V 10%		V84C4S47-10%		PM4S47	4DP-3-473	GEM-1615	4TM-S47
C23	.018 200V 10%		V84C4S2-10%		PM6S2	4DP-2-203	GEM-1612	2TM-S2
C24	.047 400V 10%		V84C4S47-10%		PM4S47	4DP-3-473	GEM-1615	4TM-S47
C25	.0068 200V 10%		V84C2D68-10%		PM6D68	6DP-1-682	GEM-16268	6TM-D68
C26	.27 400V 10%		V84C4P25-0%		PM4P25	4DP-5-274	GEM-4025	4TM-P25
C27	.27 400V 10%		V84C4P25-10%		PM4P25	4DP-5-274	GEM-4025	4TM-P25
C28	.27 400V 10%		V84C4P25-10%		PM4P25	4DP-5-274	GEM-4025	4TM-P25
C29	100 10%		NPO-S1 100	D6-101	L10T1	CCD-101	GP310	10TS-T10
C30	.001 200V 10%		V84C6D1-10%	DD-102	PM6D1	6DP-1-102	GEM-1621	6TM-D1
C31	470 5%		1469-00047		5R5T47	CM-19B-471J	MCJ244	MS-347
C32	.01 400V 10%		V84C4S1-10%		PM4S1	4DP-1-103	GEM-1611	4TM-S1
C33	.01 400V 10%		V84C4S1-10%		PM4S1	4DP-1-103	GEM-1611	4TM-S1
C34	100 10%		NPO-S1 100	D6-101	L10T1	CCD-101	GP310	10TS-T10

CONTROLS

ITEM No.	RATING RESIST-ANCE	RATING WATTS	RCA VICTOR PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K *		108485					Loudness, Right Channel
B	500K *							Loudness, Left Channel
C	Switch							Push-Pull Off-On
R2A	500K		108476	B-60	AD47-500K-Z		FA55A	Bass, Right Channel
B	500K			SR-60	Not Req.		RU55A	Bass, Left Channel
C	Shaft			Not Req.	FS-3		CS3500	
R3A	500K		108475	B-59	AD47-500K-S		FA55L	Treble, Right Channel
B	500K			SR-59	Not Req.		RU55L	Treble, Left Channel
C	Shaft			Not Req.	FS-3		CS3500	
R4A	90Ω	2(WW)	108493					Balance Indicator
B	1meg							Balance

* Taps @ 84K and 168K.

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R5	1meg	
R6	2.7meg	
R7	100K	
R8	1500Ω	
R9	8200Ω	
R10	100K	
R11	330K	
R12	22K	
R13	8200Ω	
R14	47K	
R15	100K	
R16	1500Ω	
R17	2.7meg	
R18	100K	
R19	8200Ω	
R20	100K	
R21	330K	
R22	22K	
R23	8200Ω	
R24	47K	
R25	100K	
R26	220K	
R27	1meg	
R28	82K	
R29	5600Ω	

ITEM No.	RATING	REMARKS
R30	8200Ω	
R31	56K	
R32	22K	
R33	2700Ω	
R34	27K	
R35	22K	
R36	470K	
R37	470K	
R38	82Ω 2W	
R39	10K	
R40	100K	
R41	100K	
R42	470K	
R43	47K	
R44	100K	
R45	1800Ω	
R46	100K	
R47	1meg	
R48	82K	
R49	5600Ω	
R50	8200Ω	
R51	56K	
R52	22K	
R53	2700Ω	
R54	27K	

ITEM No.	RATING	REMARKS
R55	22K	
R56	470K	
R57	470K	
R58	130Ω 5% 5W	#108186
R59	220K	
R60	1meg	
R61	82K	
R62	5600Ω	
R63	8200Ω	
R64	56K	
R65	22K	
R66	2700Ω	
R67	27K	
R68	22K	
R69	470K	
R70	470K	
R71	2200Ω	
R72	82Ω 2W	
R73A	900Ω 10W	#108422
B	130Ω 3W	#108422
C	130Ω 3W	#108422
R74	2200Ω 1W	
R75	1200Ω 2W	

RCA Victor Part Number.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	RCA VICTOR PART No.	REPLACEMENT DATA
K1	Tone Compensation	470mmf, 1000mmf, 4700mmf, 10000mmf, 22K, 220K	106457	
K2	Tone Compensation	470mmf, 1000mmf, 4700mmf, 10000mmf, 22K, 220K	106457	

FILTER CHOKE

ITEM No.	RATINGS CURRENT (Measured)	RATINGS DC RES.	RATINGS INDUCTANCE (0 CURRENT 1000 ∿)	REPLACEMENT DATA RCA VICTOR PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
L1	.260A	70Ω	4.3HY	108424			C-2334			

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA: RCA VICTOR PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
	PRI.	SEC. 1	SEC. 2							
T1	117V Ⓐ 1.8A	660 VCT Ⓐ .260A	5V Ⓐ 3A	108790						
	SEC. 3	SEC. 4	SEC. 5							
	6.3 VCT Ⓐ 3.9A	6.3V Ⓐ 2.8A								

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA: RCA VICTOR PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
	PRI.	SEC.							
T2	6600Ω CT	6-8Ω	108792	A-2905	AU-609	A-3880	24S14 ①	S-57Z ①	① Drill new mounting hole.
T3	6600Ω CT	6-8Ω	108792	A-2905	AU-609	A-3880	24S14 ①	S-57Z ①	
T4	6600Ω CT	6-8Ω	108792	A-2905	AU-609	A-3880	24S14 ①	S-57Z ①	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA: RCA VICTOR PART No.	QUAM PART No.	NOTES
	SIZE	FIELD	V. C. IMP.			
SP1	5"x 7"	PM	6-8Ω	♦ 108674	57A1Z7, 8	* Model PS-16
SP2	3½"	PM	4-6Ω	♦ 105395	3A15TZ4, 9	♦ Model KS-16 (Left Channel)
SP3	12"	PM	8-10Ω	* 108658	12A6AZ8, 3	‡ Model KS-16 (Right Channel)
SP4	5"x 7"	PM	6-8Ω	‡ 108674	57A1Z7, 8	
SP5	3½"	PM	4-6Ω	‡ 105395	3A15TZ4, 9	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA: RCA VICTOR PART No.	ASTATIC PART No.		ELECTRO-VOICE PART No.		JENSEN PART No.		SONOTONE PART No.	
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE
M1	106960A	13TBX		26SD	S1-1 S3-3			8TA4-SD	N-8TA-SD

PHONO NEEDLE

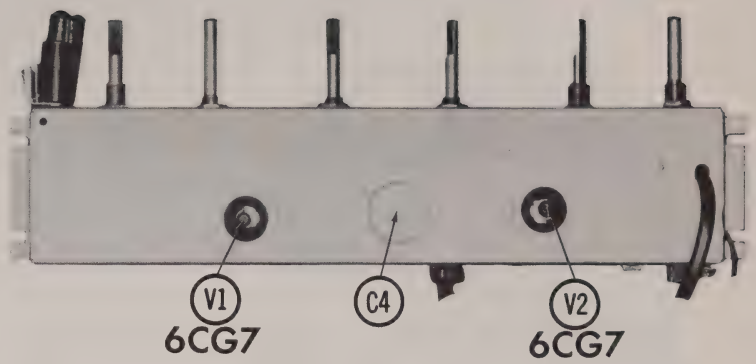
(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA: RCA VICTOR PART No.	JENSEN PART No.	REMARKS
M2	108215 † ♦	M-77X † or M-77XSD †♦ or M-77XDD ♦	† Jewel ♦ Diamond

MISCELLANEOUS

ITEM No.	PART NAME	RCA VICTOR PART No.	NOTES
M3	Switch	108473	Function (Rotary Wafer Type)
M4	Switch	108494	Speaker Reversing (Rotary Wafer Type)
M5	Switch	108457	Changer Off-On (Part of Changer)
M6	Motor		Phono-Drive (Part of Changer)

PREAMP CHASSIS - TOP VIEW



CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	108859	Loudness
Knob	108506	Treble, Bass, Function
Leg	X5138	Cabinet, Mahogany, Model PS-16
Leg	X5140	Cabinet, Oak, Model PS-16
Leg	X5139	Cabinet, Walnut, Model PS-16
Leg	X5141	Speaker Cabinet, Mahogany, Model KS-16
Leg	X5142	Speaker Cabinet, Walnut, Model KS-16
Leg	X5143	Speaker Cabinet, Oak, Model KS-16
Lid	X5135	Cabinet, Mahogany, Model PS-16
Lid	X5136	Cabinet, Walnut, Model PS-16
Lid	X5137	Cabinet, Oak, Model PS-16
Handle	108676	Speaker Cabinet, Model KS-16

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

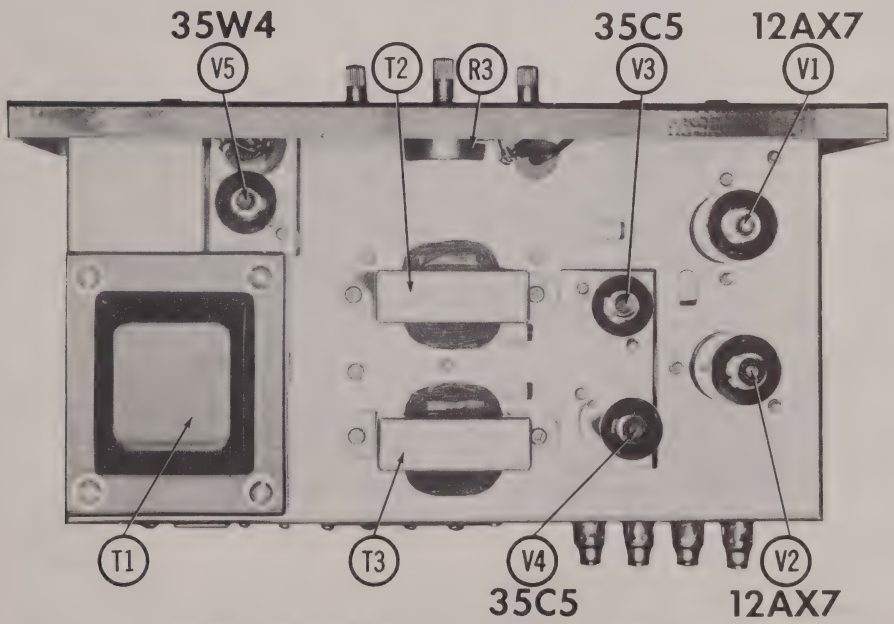
PHOTOFACT® Folder

REALISTIC MODEL STEREODYNE/7

REALISTIC MODEL STEREODYNE/7

TRADE NAME	Realistic Model Stereodyne/7
SUPPLIER	Radio Shack Corp., 730 Commonwealth Ave., Boston 17, Mass.
TYPE SET	AC Operated 5 Tube Stereo Amplifier
POWER SUPPLY	110 - 120 Volts AC, 60 Cycles RATING 38 Watts, .41 Amp. @117 Volts AC

REALISTIC MODEL STEREODYNE/7



HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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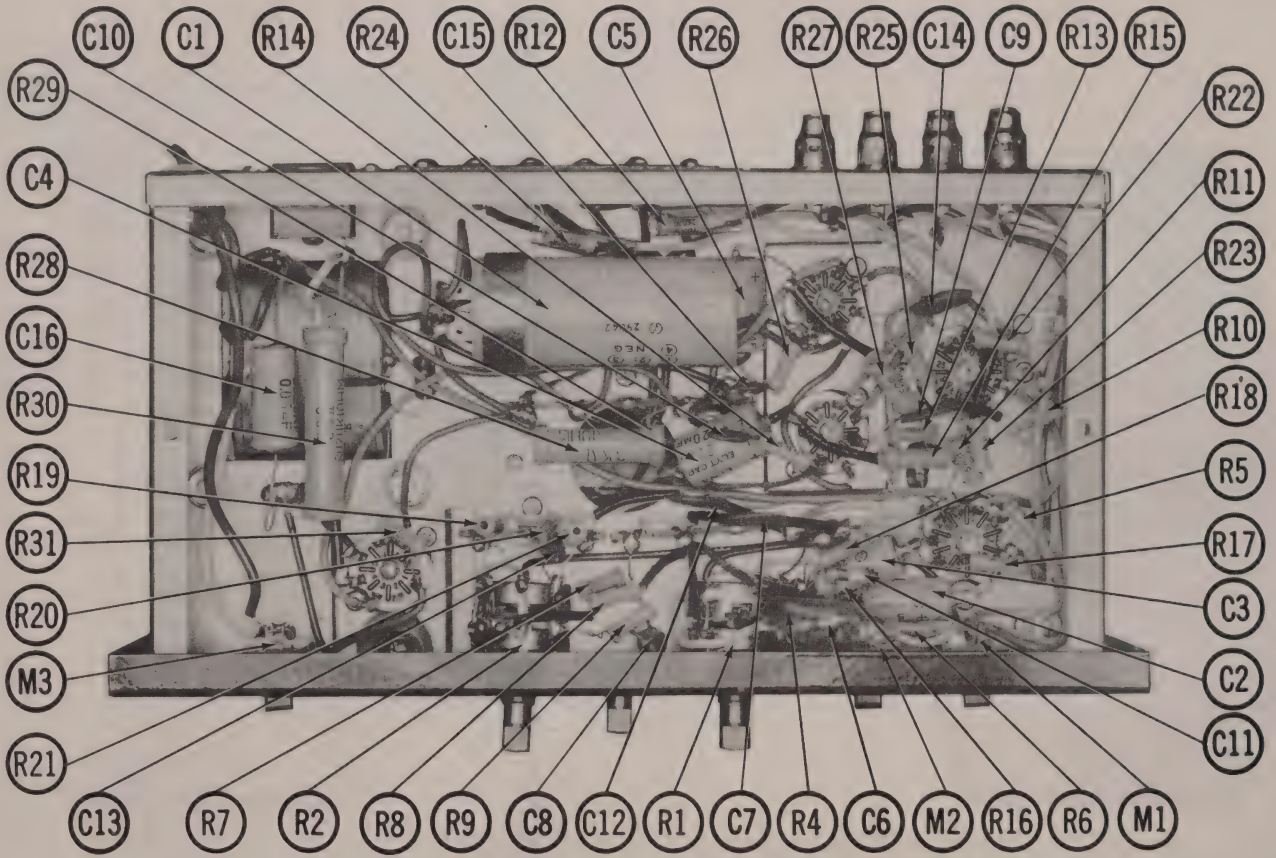
JV990

SET 502 FOLDER 16



CHASSIS BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS

TUBES

◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Left Channel AF Amp. - Right Channel AF Amp.	12AX7	V3	Left Channel Output	35C5
V2	Left Channel AF Amp. - Right Channel AF Amp.	12AX7	V4	Right Channel Output	35C5
			V5	Rectifier	35W4

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	REALISTIC PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	50	150		AFH3-09	C0090	FP311.55	TMT-9	TVL-3438	
B	30	150							
C	20	150							
C2	5	50		PRS1310	BBR5-50	TC30	TD-5-50	TVA-1303	
C3	5	50		PRS1310	BBR5-50	TC30	TD-5-50	TVA-1303	
C4	20	25		PRS1330	BBR20-25	TT25X20	TD-25-25	TVA-1205	
C5	20	25		PRS1330	BBR20-25	TT25X20	TD-25-25	TVA-1205	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C6	120 5%			TCZ-120	22R5T12	CM-19B-121J	CNO-312	10TCC-T12
C7	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C8	800		BPD-0008	DD-801	L10T8	CCD-801	GP382	10TS-T80
C9	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C10	1500		BPD-0015	DD-153	BYA10D15	CCD-152	B-215	5HK-D15
C11	120 5%			TCZ-120	22R5T12	CM-19B-121J	CNO-312	10TCC-T12
C12	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C13	800		BPD-0008	DD-801	L10T8	CCD-801	GP382	10TS-T80
C14	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C15	1500		BPD-0015	DD-152	BYA10D15	CCD-152	B-215	5HK-D15
C16	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S5

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	REALISTIC PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	1meg	½		AB-70				Volume, Left Channel
B	1meg	½		SR-70				Volume, Right Channel
C	Shaft			AK-29				
R2A	1meg	½		AB-69				Tone, Left Channel
B	1meg	½		SR-69				Tone, Right Channel
C	Shaft			AK-29				
R3A	2meg	½		AB-75				Balance
B	Shaft			AK-29				

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R4	500K	
R5	100K	
R6	5000Ω	
R7	220K	
R8	220K	
R9	220K	
R10	100K	
R11	5000Ω	
R12	10K	
R13	500K	

ITEM No.	RATING	REMARKS
R14	5000Ω	
R15	150Ω 1W	
R16	500K	
R17	100K	
R18	5000Ω	
R19	220K	
R20	220K	
R21	220K	
R22	100K	
R23	5000Ω	

ITEM No.	RATING	REMARKS
R24	10K	
R25	500K	
R26	5000Ω	
R27	150Ω 1W	
R28	3000Ω 5W	IRC#PW5-3K
R29	5000Ω	
R30	50Ω 7W	IRC#PW10-50Ω
R31	100K	

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	PRI.	SEC. 1	SEC. 2	REALISTIC PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	117V Ⓐ .41A	120V Ⓐ .080A		TP-70						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	REALISTIC PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	2200Ω	6-8Ω		A-2902①	AU-604①	A-3849①	22S86		
T3	2200Ω	6-8Ω		A-2902①	AU-604①	A-3849①	22S86		

① Drill New Mounting Holes.

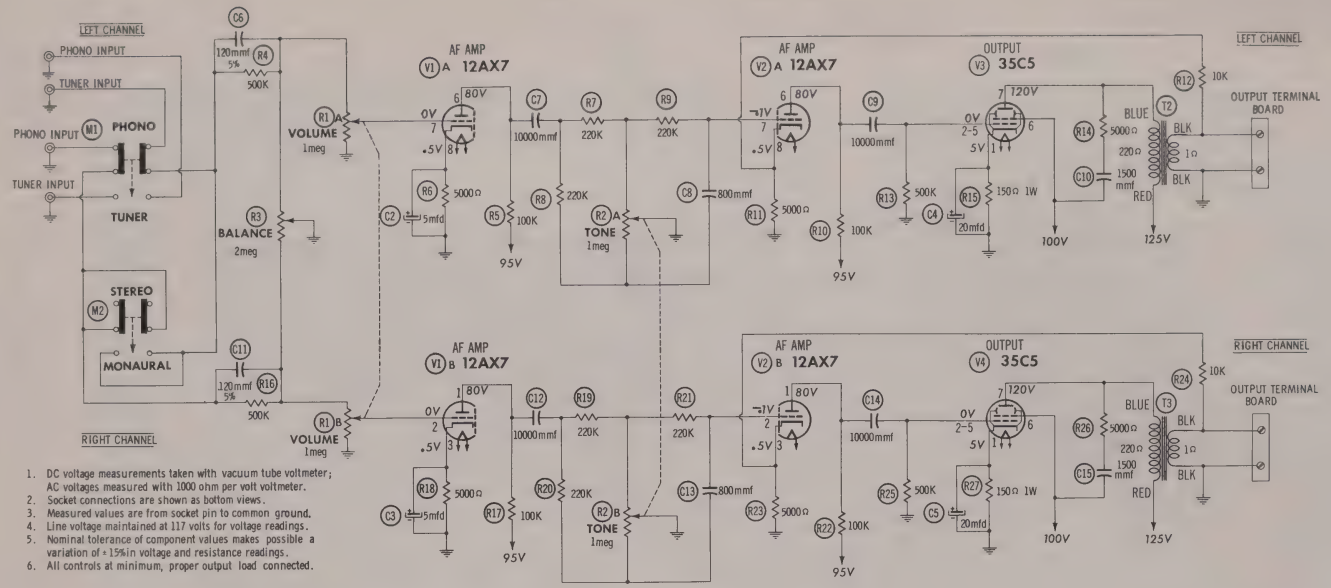
MISCELLANEOUS

ITEM No.	PART NAME	REALISTIC PART No.	NOTES
M1	Switch		Phono-Tuner(DPDT, Slide Type)
M2	Switch		Stereo-Monaural (DPDT, Slide Type)
M3	Switch		Power Off-On (SPDT, Slide Type)

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

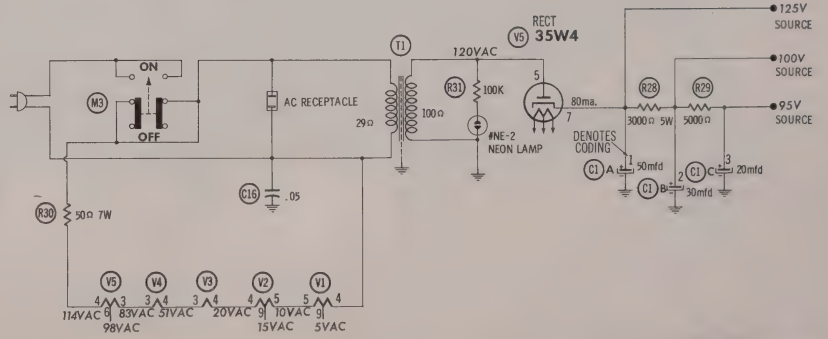


1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ± 15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	†110K	0Ω	5000Ω	■0Ω	■12Ω	†110K	0Ω	5000Ω	■6Ω
V2	12AX7	†110K	500K	3500Ω	■24Ω	■12Ω	†110K	500K	3500Ω	■18Ω
V3	35C5	150Ω	500K	■40Ω	■24Ω	500K	†3000Ω	†220Ω		
V4	35C5	150Ω	500K	■50Ω	■40Ω	500K	†3000Ω	†220Ω		
V5	35W4	TP	NC	■50Ω	■45Ω	100Ω	48Ω	¶		

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 7 OF V5.
NC NO CONNECTION
■ MEASURED FROM PIN 4 OF V1.
TP TIE POINT



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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REALISTIC MODEL STEREODYNE/7

PHOTOFACT® Folder with CIRCUITRACE®

WEBCOR MODELS
1055-1, 1172-1 (Ch. 14X331)

WEBCOR MODELS
1055-1, 1172-1 (Ch. 14X331)

MODEL 1055-1

WEBCOR MODELS
1055-1, 1172-1 (Ch. 14X331)

TRADE NAME	Webcor Models BC-1055-1, MC-1055-1, WC-1055-1, EP-1172-1 (Ch. 14X331)
MANUFACTURER	Webcor, Inc., 5610 W. Bloomingdale Ave., Chicago 39, Illinois
TYPE SET	AC Operated 3 Tube Stereo Phono Amplifier With 4 Speed Automatic Record Changer
POWER SUPPLY	105 - 120 Volts AC, 60 Cycles RATING 34 Watts, .36 Amp. @ 117 Volts AC (Less Motor)

FOR SERVICE INFORMATION ON RECORD CHANGER PART #T184-25 USED IN MODEL 1055-1 OR PART #T184-33 USED IN MODEL 1172-1 — SEE WEBCOR 172 — PHOTOFACT SET 447 FOLDER 13 OR RECORD CHANGER MANUAL RC-12

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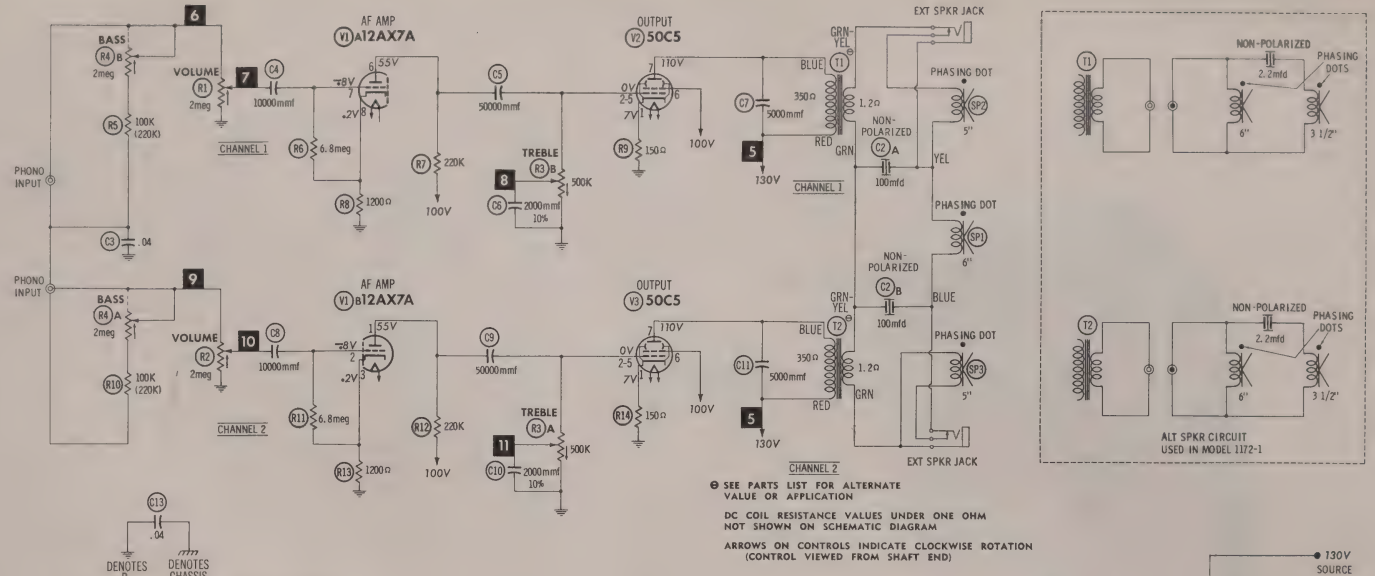


⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

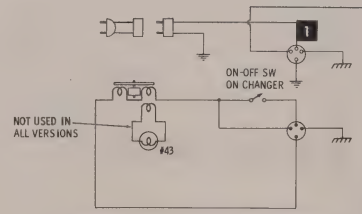
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

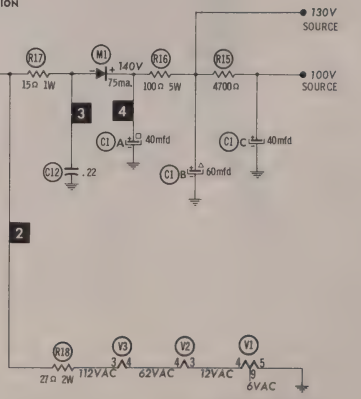
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7A	†225K	6.8meg	1200Ω	12Ω	0Ω	†225K	6.8meg	1200Ω	6Ω
V2	50C5	150Ω	500K	12Ω	62Ω	500K	†4800Ω	†450Ω		
V3	50C5	150Ω	500K	112Ω	62Ω	500K	†4800Ω	†450Ω		

† MEASURED FROM OUTPUT OF M1.





1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE®

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WEBCOR MODELS
1055-1, 1172-1 (Ch. 14X331)

PARTS LIST AND DESCRIPTIONS

TUBES

• GENERAL ELECTRIC •		RAYTHEON • SYLVANIA •			
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Channel 1 AF Amp. - Channel 2 AF Amp.	12AX7A	V2 V3	Channel 1 Output Channel 2 Output	50C5 50C5

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA WEBCOR PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▪40	150	30P367	PWH3-11-30	C0100 †	PFP311.8 ‡	TMT-3142 ¶		
B	▲60	150							
C	40	150							
C2A	100	25NP	30P390	PRS7340	BR10015	TCN425		TVANS-1207.1*	①
B	100	25NP		PRS7340	BR10015	TCN425		TVANS-1207.1*	①

† Use printed circuit adapters #55277 & 55278.
‡ Use printed circuit kit FPA.
¶ Use printed circuit kit TMAS & TMAL.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
① Model 1172-1 uses 2.2mfd, 3 volt paper capacitor in this application (Part #30P350).

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3	.04 400V		P488N-04	DD-403	CUB6S4	4DP-3-403	GEM-414	4TM-S4
C4	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C5	50000		BPD-05	DD-503	CUB2S5	4DP-3-503	GP150	5HK-S50
C6	2000 10%		DI-2000		PM6D2	CCD-202	JL-220	10TS-D20
C7	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D20
C8	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C9	50000		BPD-05	DD-503	CUB2S5	4DP-3-503	GP150	5HK-S50
C10	2000 10%		DI-2000		PM6D2	CCD-202	JL-220	10TS-D20
C11	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C12	.22 400V		P4151N-22		BC6P22J	4DP-5-224	ACE6022	4SE-P22
C13	.04 400V		P488N-04	DD-403	CUB6S4	4DP-3-403	GEM-414	4TM-S4

CONTROLS

ITEM No.	RATING RESIST-ANCE	RATING WATTS	REPLACEMENT DATA WEBCOR PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1	2meg	½	31P138				P2-26A	Volume, Channel 1
R2	2meg		31P138				P2-26A	Volume, Channel 2
R3A	500K		31P165					Treble, Channel 2
B	500K							Treble, Channel 1
R4A	2meg		31P172	B-76				Bass, Channel 2
B	2meg			SR-76				Bass, Channel 1
C	Bushing			AK-31				

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R5	100K	(220K) *
R6	6.8meg	
R7	220K	
R8	1200Ω	
R9	150Ω	

ITEM No.	RATING	REMARKS
R10	100K	(220K) *
R11	6.8meg	
R12	220K	
R13	1200Ω	
R14	150Ω	

ITEM No.	RATING	REMARKS
R15	4700Ω	
R16	100Ω 5W	IRC #PW5-100Ω
R17	15Ω 1W	
R18	27Ω 2W	

* Used in Model 1172-1 and late versions of Model 1055-1.

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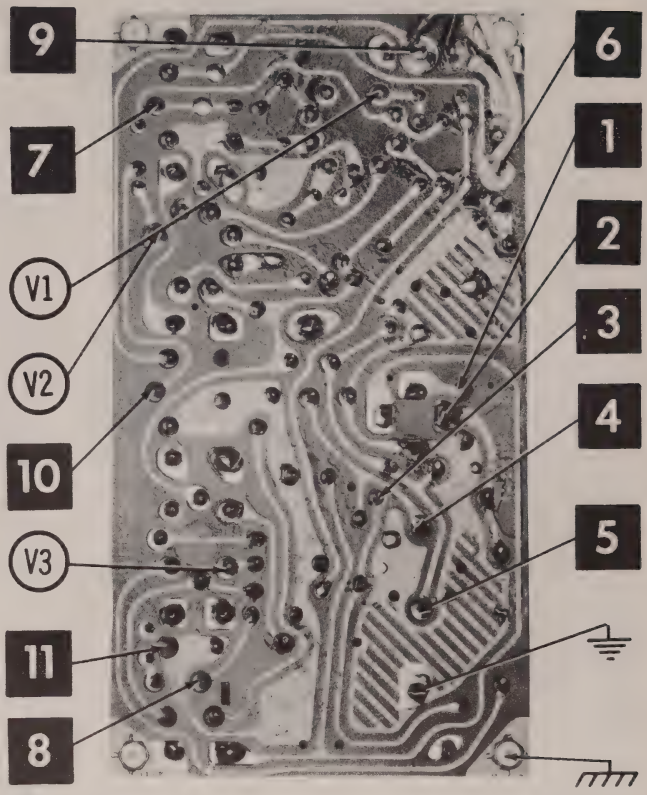
ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA: WEBCOR PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	2600Ω	6-8Ω	67P081-C①	A-2902	AU-604	A-2203	24S05		① Alternate Part #67P081.
T2	2600Ω	6-8Ω	67P081-C①	A-2902	AU-604	A-2203	24S05		

SPEAKER

ITEM No.	TYPE: SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA: WEBCOR PART No.	QUAM PART No.	NOTES
SP1	6"	PM	6-8Ω	76P102-A *	6A15RZ8	* Model 1055-1
SP2	5"	PM	6-8Ω	76P097 *	5A1Z8	† Two used in Model 1172-1
SP3	5"	PM	6-8Ω	76P097 *	5A1Z8	
	6"	PM	6-8Ω	76P106 †		
	3½"	PM	6-8Ω	76P107 †		

RECTIFIERS

ITEM No.	RATING: CURRENT (Measured)	REPLACEMENT DATA: WEBCOR PART No.	ITT PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.075A	65P155 *	RE504 *	1N1763 *	F2 *	SR200 *	* Silicon Type

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA: WEBCOR PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE	JENSEN PART No. CARTRIDGE	JENSEN PART No. NEEDLE	SONOTONE PART No. CARTRIDGE	SONOTONE PART No. NEEDLE
M2	21P586①	13T		13		A-44X		10T2-S	

① Includes needles.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA: WEBCOR PART No.	JENSEN PART No.	REMARKS
M3	(Part of M2)	* A-44X † or * A-44XSD †♦ or * A-44XDD ♦	† Jewel ♦ Diamond * Includes Cartridge

CABINETS & CABINET PARTS

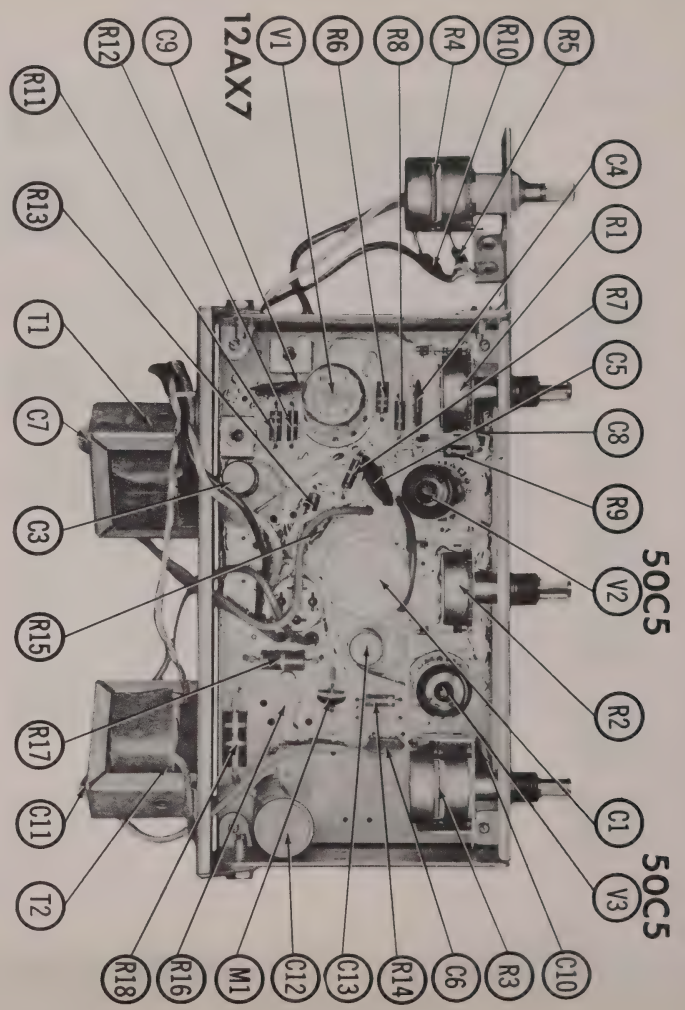
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	39P213-2	Loudness, Bass, Treble; Model 1055-1
Knob	39P213-6	Loudness, Bass, Treble; Model 1172-1
Cabinet	92X122-1	Mahogany, Model MC-1055-1
Cabinet	92X122-2	Blonde, Model BC-1055-1
Cabinet	92X122-3	Walnut, Model WC-1055-1
Cabinet	92X128-1	Ebony, Model EP-1172-1
Cabinet	11X2390-1	Speaker (Left) Model EP-1172-1
Cabinet	11X2391-1	Speaker (Right) Model EP-1172-1
Leg	39P243	With Mounting Hardware, Model 1055-1
Handle	39P254-1	Cabinet, Model, EP-1172-1

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

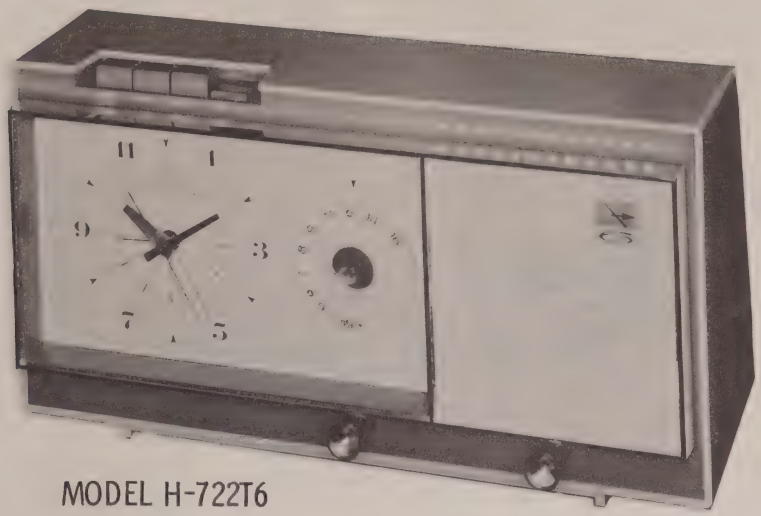
CHASSIS—TOP VIEW



PHOTOFACT® Folder with CIRCUITRACE®

WESTINGHOUSE MODELS H-722T6, H-723T6 (Ch. V-2401-2)

WESTINGHOUSE MODELS H-722T6, H-723T6 (Ch. V-2401-2)



MODEL H-722T6

WESTINGHOUSE MODELS H-722T6, H-723T6 (Ch. V-2401-2)

TRADE NAME	Westinghouse Models H-722T6, H-723T6 (Ch. V-2401-2)
MANUFACTURER	Westinghouse Electric Corp., Radio-TV Div., Metuchen, N. J.
TYPE SET	AC Operated 6 Tube AM Receiver With Electric Clock
POWER SUPPLY	105 - 120 Volts AC, 60 Cycles
TUNING RANGE—BROADCAST	535 —1625KC RATING 26 Watts, .25 Amp. @ 117 Volts AC (Less Clock)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested alignment tools:

A1, A2, A6..... GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545

A3, A4..... GENERAL CEMENT #5097, 8727
WALSCO #2515

A5, A7, A8.... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru 200mmf to pin 7 (grid) of Converter. Low side to chassis.	455KC (400~ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	High side thru 200mmf to antenna stator lug (rear section) of tuning gang. Low side to chassis.	1625KC	"	"	A5	"
3.	"	600KC	Tune to 600KC Signal.	"	A6	Adjust for maximum output while rocking tuning gang.
4.	"	1400KC	Tune to 1400KC Signal	"	A7	"
5.	Loop	1400KC	"	"	A8	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output while rocking tuning gang.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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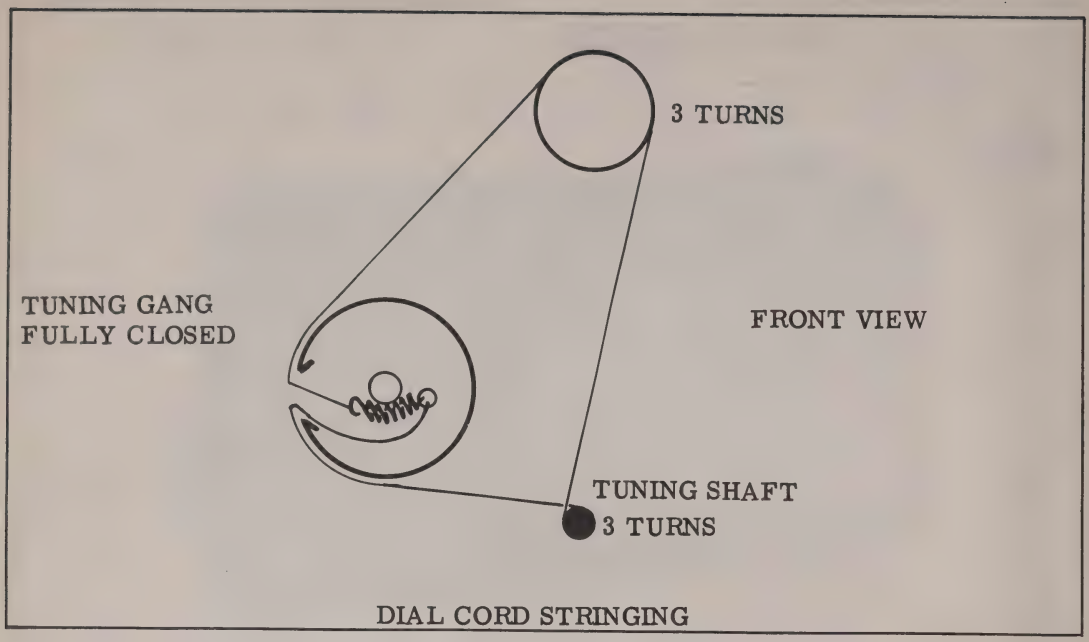
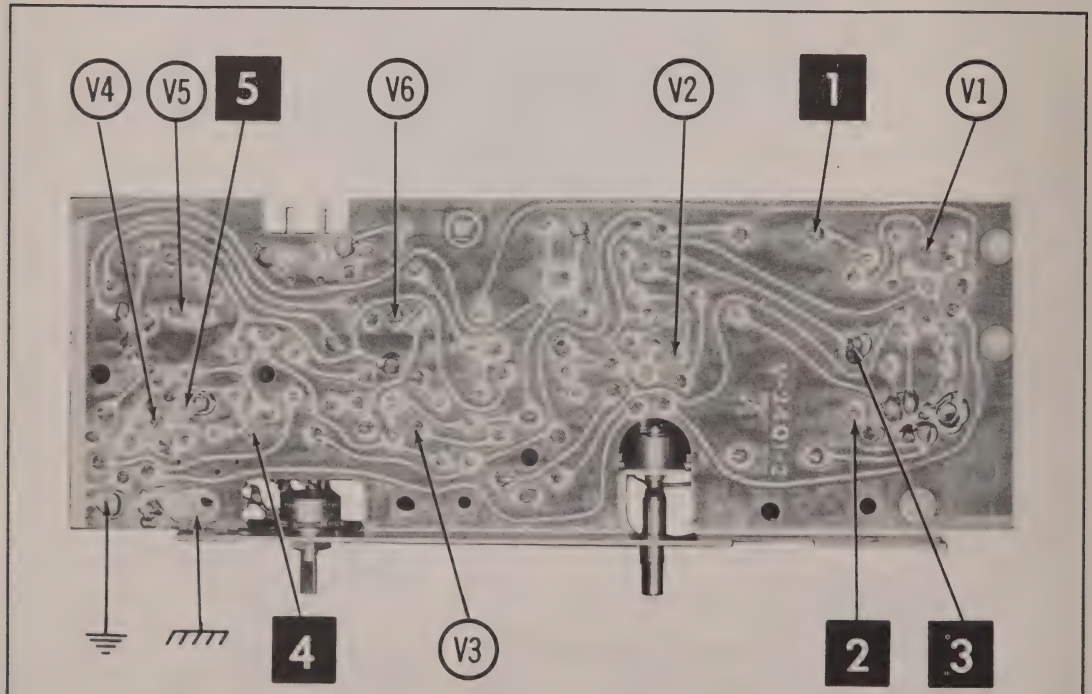
JG970

SET 502 FOLDER 18



DIAL CORD STRINGING



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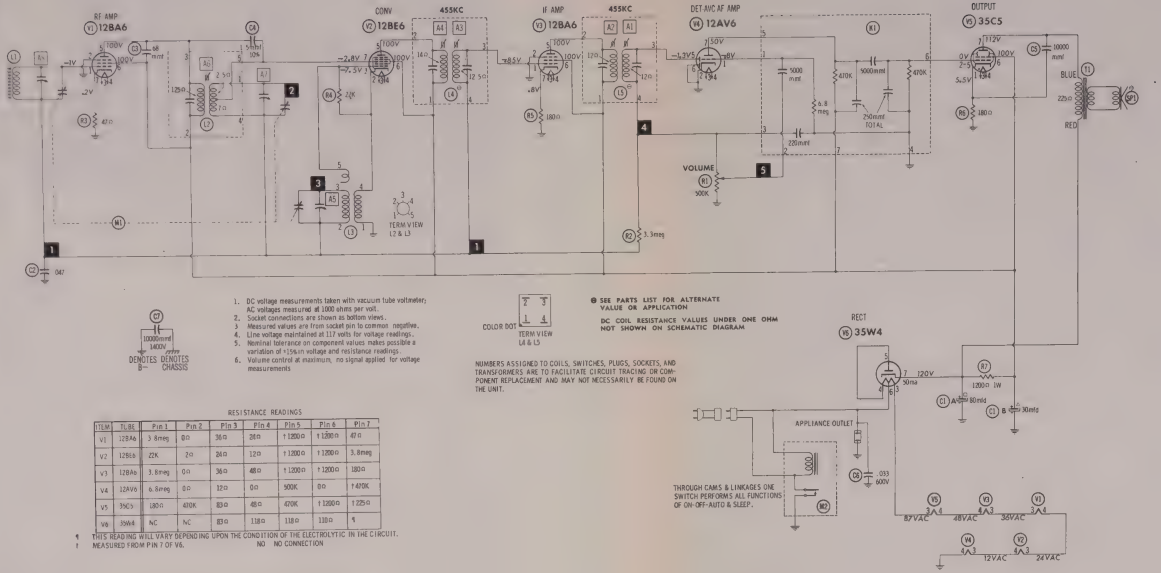
PRINTED BOARD

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±5% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements

❶ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BA6	3.8meg	0Ω	36Ω	28Ω	↑1200Ω	↑1200Ω	47Ω
V2	12BE6	22K	2Ω	26Ω	12Ω	↑1200Ω	↑1200Ω	3.8meg
V3	12BA6	3.8meg	0Ω	36Ω	48Ω	↑1200Ω	↑1200Ω	180Ω
V4	12AV6	6.8meg	0Ω	12Ω	0Ω	500K	0Ω	↑470K
V5	35C5	180Ω	470K	83Ω	48Ω	470K	↑1200Ω	↑225Ω
V6	35W4	NC	NC	83Ω	118Ω	118Ω	118Ω	¶

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
↑ MEASURED FROM PIN 7 OF V6. NO NO CONNECTION

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE
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WESTINGHOUSE MODELS H-722T6, H-723T6 (Ch. V-2401-2)

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	Westinghouse PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	570V077H01 •	4A07	• Includes T1.

MISCELLANEOUS

ITEM No.	PART NAME	Westinghouse PART No.	NOTES
M1	Tuning Cap.	330V032H01	3 Gang
M2	Clock Assy.	650V017H01	(Telechron #J561. Includes Off-On Switch #690V011H16)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	550V141H01	Tuning, Volume
Knob	550V138H02	Pushbutton (Clock), Model H-722T6
Knob	550V138H03	Pushbutton (Clock), Model H-723T6
Dial	550V139H02	Tuning
Crystal	558V277H01	Clock
Cabinet Front	558V276H02	Model H-722T6
Cabinet Front	558V276H03	Model H-723T6
Cabinet	513V057H04	Model H-722T6
Cabinet	513V057H05	Model H-723T6

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord (Interlock Type) ..... Use BELDEN No. 8874

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 2 screws from cabinet top corners and 2 from cabinet bottom.
2. Slide chassis and attached cabinet front from cabinet.

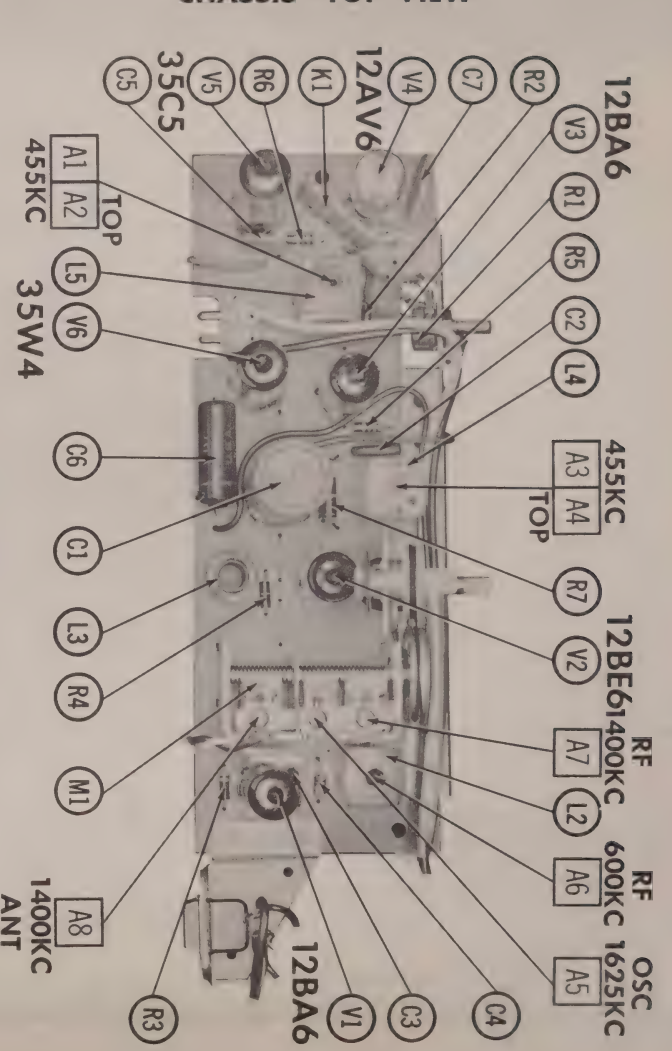
CLOCK CRYSTAL REMOVAL

1. Remove cabinet front. (See chassis removal.)
2. Remove 2 speaker mounting screws that extend into clock crystal studs.
3. Gently pull crystal forward on speaker end and free of notches on clock end.

CLOCK REMOVAL

1. Remove chassis and clock crystal. (See 2 previous sections.)
2. Unsolder clock leads.
3. Remove second, minute, hour, and alarm-set hands in that order.
4. Remove 4 clock mounting nuts. Remove clock. Knobs should not be removed from the clock.

CHASSIS—TOP VIEW



OSCILLOSCOPE WAVEFORM PATTERNS

The waveforms shown on the schematic diagram are as observed on a Tektronix type 524D wide band television oscilloscope with the receiver tuned to a reasonably strong signal and a normal picture. The voltages shown on each waveform are the approximate peak to peak amplitudes. The frequency accompanying each waveform indicates the repetition rate of the waveform not the sweep rate of the oscilloscope. If the waveforms are observed on the oscilloscope with a poor high frequency response, the corners of the pulses will tend to be more rounded than those shown on the schematic diagram and the amplitude of any high frequency pulse will tend to be less.

DC SOCKET VOLTAGES

All DC socket voltages shown on the schematic are measured with a high impedance VTVM and under zero signal conditions.

SCHEMATIC IS DIVIDED INTO FOUR SECTIONS WITH EACH SECTION HAVING ITS OWN SERIES OF REFERENCE NUMBERS.

ALL RESISTANCE VALUES IN OHMS AND ½ WATT UNLESS OTHERWISE SPECIFIED.

ALL CAPACITANCE VALUES LESS THAN 1.0 IN MF. AND ABOVE 1.0 IN MMF. UNLESS OTHERWISE NOTED.

COIL RESISTANCE VALUES LESS THAN 1.0 OHM ARE NOT SHOWN.

K=1000

SOUND I-F AND AUDIO

VIDEO

VERT. SWEEP AND SYNC.

HORIZ. SWEEP AND POWER SUPPLY

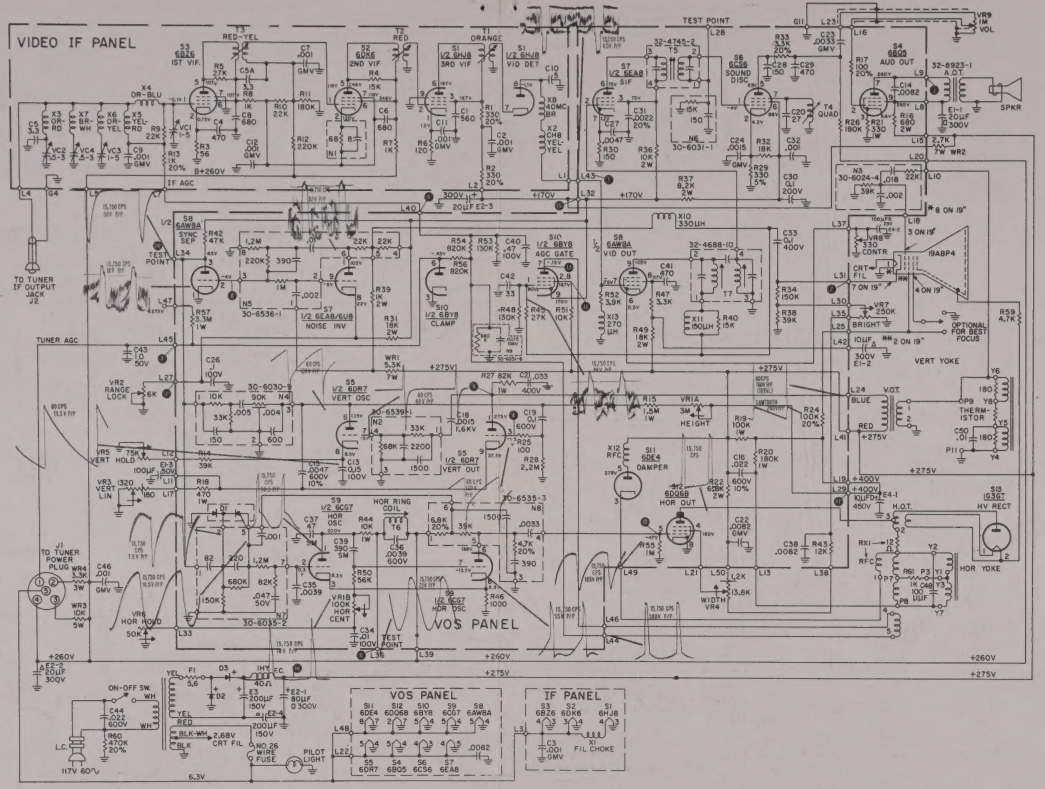
DEFLECTION YOKE

YOKE PLUG

YOKE SOCKET

AIRLINE MODELS WG-5203, WG-5205, WG-5213, WG-5303, WG-5305, WG-5313

Schematic Diagram Courtesy of Montgomery Ward & Company



PHILCO MODELS J-3702A, F, L, J-3704GL, PL, J-3706BL, UJ-3702A,
F, L, UJ-3704GL, PL, UJ-3706BL (CH. 11N51)

Schematic Diagram Courtesy of Philco Corporation

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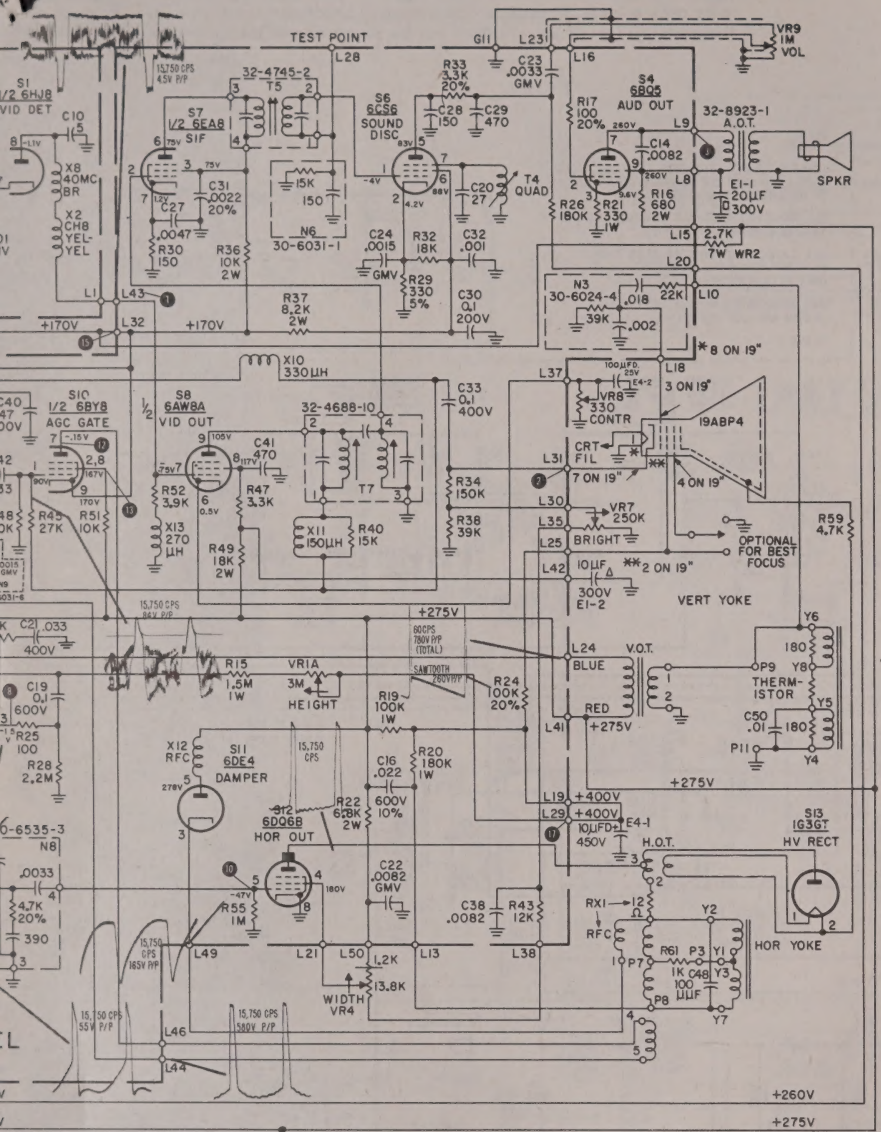

Schematic Diagram Courtesy of Philco Corporation